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Performance Evaluation of Global Equity Managers

By

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CHAPTER 1

INTRODUCTION

Most plan sponsors do not actively manage all of their assets, and many do not directly buy or sell any of their assets. Rather, plan sponsors typically hire investment managers to buy and sell the plan's assets. For example, say a pension fund decides to allocate $50 million to a manager with a US mandate. This manager would then invest the $50 million in US stocks, and the plan sponsor would compensate the manager by paying him/her a percentage of the assets (usually 0.5-1.0% annually). Thus, a plan sponsor's primary responsibility is to evaluate investment managers and decide on the optimal way to allocate capital among these managers. This paper will focus on the performance evaluation of equity managers.

Historically, plan sponsors have segmented their equity portfolio into two separate portfolios: a US portfolio and an international portfolio. As such, plan sponsors hire investment managers with either a US mandate or a non-US (NUS) mandate. US managers can only invest in stocks domiciled in the US, and NUS managers can only invest in stocks domiciled outside of the US. This method allows plan sponsors to diversify their portfolio while controlling their exposure to the two markets.

There is a new and growing set of equity managers, however, who have a global mandate. These managers do not have the same restrictions as US and NUS managers and they can invest in stocks domiciled in both the US and in other countries. Many institutional investors see promise in global managers for two reasons. Firstly, as globalization runs its course the differences between US stocks and NUS stocks becomes increasingly arbitrary. Most large US companies do a substantial amount of business overseas, and many NUS companies buy and sell in the US. As such, US stock prices are dependent on events in foreign markets and vice-versa—in short, stock prices are becoming

increasingly integrated around the world. If markets are becoming more integrated, then intuition suggests that a company's sector or industry would better describe its risk-return characteristics than the company's home. This point is argued by Barnes and Cavaglia: "Globally, the significant increase in cross-border mergers and acquisitions has resulted in greater geographic diversification of earnings and a diminution of corporate identification with a single country" (Barnes et. al 2001). Similarly, "the mergers and acquisitions evidence suggests that firms are restructuring by focusing on their core production activity while expanding across borders" (Cavaglia et. al 2004). Of course, this effect varies by country and by industry—less developed countries tend to have a more significant impact on stocks than larger countries, and European stocks are more integrated than emerging markets in Asia. Additionally, information technology stocks are highly correlated across countries, whereas financials are regulated differently and are thus not as highly correlated.

The magnitude of stock price integration is contested by numerous other studies. Griffin and Karolyi (1998) find that less than 4% of variation in country index returns can be explained by industry effects. If industry factors play such a small role in determining international stock returns, then the distinction between US and NUS managers should not be ignored. Brooks and DelNegro (2004) document a strong increase in the importance of sector effects in the mid-1990s, but they find that this increase is limited to the technology, media, and telecommunications (TMT) sector. Outside of TMT there is little evidence to support that sector factors are increasing in importance—but a true increase in stock price integration should not be limited to a certain sector. Furthermore, the volatile nature of the TMT sector leads the authors to believe that the rise of industry effects in the 1990s was a result of the technology bubble.

Secondly, a manager with an increased breadth of investment decisions should be able to outperform a more constrained manager on a risk-adjusted basis. The logic for this argument lies in Richard Grinold's (1989) "Fundamental Law of Active Management," which states: assuming a manager has skill, an increase in the number of independent, active decisions available per year (breadth) will increase the manager's risk-adjusted return. Removing geographical constraints effectively doubles a fund manager's set of potential securities and the fund's breadth doubles. If this manager has skill, Grinold's law predicts that global managers should outperform the constrained US and NUS managers.

Past studies on global equity management have compared equity correlations across sectors with correlations across countries when making a case for or against global equity investing(Speidell et al, Brooks and DelNegro 2004), but no one has directly evaluated managers identified as global equity managers. By doing so, we are able to test if the justifications for global managers are realized in practice. A limitation of our study results from a survivorship bias in the data. Institutional managers who stopped reporting returns are dropped from the database. This means that funds that were taken over or liquidated between 1989 and 2007 are not included in the analysis. The bias exists for global, US, and NUS managers alike.

This paper evaluates and compares the returns of global, US, and NUS managers by employing the methodology found in the finance literature on performance evaluation. Using classical tests of performance evaluation, we find evidence that global managers can outperform the market on a risk-adjusted basis. Despite the arguments in favor of global equity, we find that global equity managers do not display reliable performance persistence. Global managers who outperform the market in one period generally do not beat the market the next period, so the "winning" managers are re-shuffled

each period. Conversely, US and NUS managers tend to display more reliable performance persistence than global managers. Our final test evaluates global managers' ability to time the markets. Since global managers have the unique ability to shift assets in and out of different regions, it is possible that global managers are adding value by outguessing the market—shifting assets into the US when the US market performs relatively well, and shifting assets out of the US when other regions performs relatively well. We find that global managers are not able to outguess either the US or the NUS market.

CHAPTER 2

LITERATURE REVIEW

Section 2.1 Classical Performance Evaluation

Evaluating portfolio managers on a risk-adjusted basis began in the 1960s with Treynor (1965), Sharpe (1966), and Jensen (1967). These classical studies sought to account for the risks managers take—a manager who earns a 20% return is not necessarily more skilled than a manager who earns a 5% return if the former took larger risks that exposed the portfolio to larger downturns. Taking risks does not require skill, but beating a risk-benchmark does.

Treynor points out that a manager's return in one period is highly dependent on market fluctuations outside of his/her control. Furthermore, evaluating a manager by his average return does not allow for an investor's risk aversion. Treynor develops the characteristic line to rank managers on a risk-adjusted basis. This measure treats a manager's return as a function of the market's return in any given period. If a manager has significant deviations from the characteristic line, then either the manager is not well diversified or he is altering the volatility of the fund, perhaps to speculate on fluctuations in the market. Such speculation leaves the plan sponsor unaware of the level of risk in the portfolio, but the uncertainty may be worthwhile if the manager is able to improve the rate of return. By observing a manager's characteristic line, a plan sponsor can better understand the volatility associated with the fund and determine if that volatility remains constant. Furthermore, since investors prefer lower uncertainty for a given level of return, the characteristic line can provide a way to rank managers on a risk-adjusted basis. Two characteristic lines with equal slopes have the same level of risk, so the manager with a higher characteristic line is a superior manager. All managers can be compared by looking at the intercept of a manager's characteristic line with the horizontal line

representing the risk-free rate. Thus this ranking measure is independent of risk-preferences and market fluctuations.

Sharpe (66) evaluates managers using Treynor's index. He finds that the Treynor index is a good predictor of a manager's future reward-to-variability ratio, which is defined as a manager's returns above the risk-free rate divided by the manager's standard deviation in returns. Sharpe also looks at the effect of expense ratios and fund size on the fund's return-to-variability ratio. He finds that funds with high expense ratios tend to have a higher reward-to-variability ratio, and that expense ratios do a better job of predicting a manager's future reward-to-variability ratio than the manager's Treynor Index. Conversely, Sharpe finds that manager size is a weak predictor of a manager's future reward-to-variability ratio. Finally, he concludes that capital markets are highly efficient and that managers cannot outperform the market when evaluated by the return-to-variability ratio.

Jensen (1967) contributes to the literature by providing an absolute measure of performance, whereas Treynor and Sharpe presented relative measures. This absolute measure is known as Jensen's alpha, and it measures a manager's ability to predict future security prices. If a manager can predict future stock prices, then his returns will be greater than the model used by Sharpe and Treynor:

$$E(R_p) = R_f + \beta_p[E(R_M) - R_f]$$

Jensen arrives at the following model:

$$E(R_p) - R_f = \alpha_p + \beta_p[E(R_M) - R_f]$$

where alpha is the manager's ability to predict future security prices. By regressing the excess returns of mutual funds on the market's excess return, Jensen is able to estimate the manager's alpha. He

finds that managers in his sample do not display a statistically significant alpha, and concludes that mutual fund managers as a group do not possess the ability to predict future security prices.

Section 2.2 Multifactor Models

These three seminal papers changed the way investors thought of risk, but there were many holes that needed addressed. First, these models assume that the only relevant risk factor is the market's excess return. The capital asset pricing model (CAPM), which serves as the theoretical backbone to the classical studies, has since been replaced by the multifactor arbitrage pricing theorem. The Fama-French (1992) paper empirically identified additional factors that explain stock returns, essentially rejecting the CAPM. The additional factors are a "high-minus-low" (HML) portfolio and a "small-minus-big" (SMB) portfolio. The HML portfolio measures the difference in returns between stocks with a high book-to-market ratio and a low book-to-market ratio. This risk is commonly referred to as the value-growth factor: growth stocks like Google have a very low book-to-market ratio and likely have a very different risk-profile than value stocks like AEP that have a very high book-to-market ratio. Similarly, the SMB portfolio accounts for differences in size, and a small firm is thought to be more risky than a large firm. This three factor model does a better job of explaining stock returns than the traditional CAPM model, but it still does not account for international risk factors.

It is likely that foreign markets do not demonstrate the same risk-return characteristics as the US market, and Hou, Karolyi, and Kho (2007) provide insights on international risk factors. They find that the international CAPM model does not explain variations in size, momentum, or value across stocks. Furthermore, momentum, cash-flow/price and the global market factors reliably explain return variations in international stocks. They also find that other measures of the value-growth factor (such as earnings/price ratio, book-to-market ratio) are not interchangeable with the cash-flow/price ratio. In

order to properly measure a manager's skill, any performance evaluation of equity managers should employ these risk factors.

Section 2.3 Performance Persistence

Second, the classical models do not adequately account for changes in risk and skill over time. Sharpe (1992) provides a way to measure a fund's behavior over time with what is now referred to as style analysis. By breaking a manager's historical returns into sub-periods, we can observe how that manager's style changes. Sharpe estimates a fund's style with returns from months t-60 to t-1 and then calculates the return for that style in time t. The difference between a fund's actual returns and the style's return is thought to be the fund's selection return. A high selection return indicates stock-picking skill that allows a manager to beat his style. This technique allows investors to see how funds change their styles over time and it provides a measure of skill.

The next question is whether or not an investment manager can persist in delivering positive risk-adjusted returns. A pension fund is not interested in managers who have delivered historic alpha if the managers do not demonstrate persistence. Each period some managers will beat the market while others underperform, and the relevant question is: do managers who beat the market one period tend to beat the market the next period? Or are the "winners" reshuffled each period? If managers demonstrate persistence, then a pension fund could potentially shift assets to past winners and expect them to continue to deliver positive risk-adjusted returns. Hendricks, Patel, and Zeckhauser (1993) find a "Hot Hands" phenomenon where fund managers that beat the market one period show short-term persistence. They find that a strategy of selecting mutual fund managers each quarter based on the previous four quarters of returns can provide significant returns above the average mutual fund. They also document the opposite effect—"Icy Hands"—where inferior managers tend to deliver

inferior returns in the short term. Elton, Gruber, and Blake (1995) document a similar phenomenon, but they contend that performance persistence lasts longer than was suggested by Hendricks, Patel, and Zeckhauser. Additionally, they document the "Icy Hands" effect but attribute it to expense ratios. Large expense ratios in the bottom decile of managers explain much of their underperformance, but the authors also allow for differences in skill.

Carhart (1997) changed the way investment managers are evaluated by introducing a risk factor for momentum. He used the fact that winning stocks that perform relatively well in a given year tend to perform relatively well in the following year. By subtracting the returns of the previous year's loser stocks from the returns of the previous year's winner stocks, Carhart created a factor for momentum. A purely mechanical strategy of investing in last year's winners does not take any stock-selection skill, so any measure of performance should account for this factor. Carhart finds that his four-factor model, which accounts for market-risk, size-oriented risk, value-oriented risk, and momentum-oriented risk, along with investment costs can explain almost all of the "important predictability in mutual fund returns." Furthermore, he finds that managers do not follow momentum strategies, but that some managers hold relatively large positions in last year's winning stocks by chance. Daniel, Grinblatt, Titman, and Wermers confirm Carhart's findings using benchmarks based on the characteristics of stocks in a manager's portfolio. They find that managers can slightly beat mechanical strategies, and the margin is likely equal to the management fees. This is consistent with Grossman and Stiglitz (1980), who find that traders can beat the market just enough to earn back their fees.

All of the previously mentioned studies have focused on mutual fund evaluation, but there are trillions of dollars invested with institutional money managers. Where most of the current studies on

mutual funds find little evidence of performance persistence, Coggin, Fabozzi, and Rahman (1993) and Busse, Goyal, and Wahal (2006) find substantial risk-adjusted excess returns. The former study looked at US equity managers and found that the best managers outperform the market, but the manager's skill is sensitive to the benchmark selection. Busse, Goyal, and Wahal (2006) found that institutional managers demonstrate persistent risk-adjusted returns for up to three years. Within three years, however, the winning portfolios tend to attract an influx of capital which likely decreases the fund's ability to provide risk-adjusted returns.

Section 2.4 Market Timing

Thus far, I have examined literature that evaluates a manager's skill at selecting underpriced stocks. Managers can add value in a second way by timing the market. Treynor and Mazuy (1966) examine fund managers' ability to predict large market movements. If a manager foresees an upturn, then the manager should shift into more volatile stocks and increase his exposure to the market. On the other hand, if a downturn looms then a manager should shift into more conservative assets that will not go down as much as the market average. If a manager can outguess the market with better than average success, then the manager's returns should display a quadratic relationship with the market's rate of return. A high market rate of return results in the manager shifting to a more risky (steep) characteristic line, and a low market rate of return results in the manager shifting to a more conservative (shallow) characteristic line. The authors find that mutual funds are not able to time the market and conclude that any variations in fund returns are the result of fluctuations in the general market or in the manager's skill in selecting underpriced stocks. Admati, Bhattacharya, Pfleiderer, and Ross (1986) confirm that a simple quadratic regression is a valid measurement of a manager's market timing ability.

Finally, it is important to mention the effects of an attrition bias on studies of performance evaluation. If a database does not include the returns on managers that went out of business, then the sample is biased upward. Managers who take on a great deal of risk have a higher probability of failure, yet they also have a larger expected return. If the failed managers are not included in the sample, then we only observe managers who took the big risks and won. This could lead to persistence as is documented in Brown, Goetzmann, Ibbotson, and Ross (1992). They find that a small survivorship bias can lead to a significant pattern of performance persistence. Carpenter and Lynch (1999) find that a survivorship bias induces a strong reversal effect if fund survival depends on multi-period persistence. That is, if persistent losers are eventually dropped from the database due to failure, then the losers in any given year must subsequently win lest they be dropped from the database.

CHAPTER 3

DATA AND METHODOLOGY

Section 3.1 Data Description

We obtained data from the Wilshire Compass database. Wilshire provides data, services, and consulting to plan sponsors, foundations and endowments, and consultants. They have over 200 clients, which represents one third of the top fifty pension funds and assets over $1.5 trillion. All of the data in the Wilshire database is self-reported by institutional investment managers, and Wilshire does not charge a fee for a manager to be included in the database. Many of Wilshire's clients use the database to search for investment managers that will fit the plan's needs.

The database provides monthly returns of investment managers, and we use the sample period 1989-2007. Descriptive statistics on the managers in our sample can be found in Table 1. Our sample contains only "live" portfolios, so any fund that exited the market due to liquidation, closure, merger, and bankruptcy from 1989-2007 is not included in our sample. This leads to an attrition rate of 0.0% and a survivorship bias. Past studies suggest a typical attrition of 3% per year (Carhart 1997, Busse et. al 2006). Additionally, many firms manage more than one portfolio. It is typical for a given investment firm to offer various portfolios that specialize by size, capitalization, or geography. We use returns from each individual portfolio. Returns are net of trading costs but gross of management fees. Table 2 presents descriptive statistics on manager returns in the database across funds.

Along with returns, managers can report a number of important fund characteristics. Managers can identify with various style assignments, including "Core/Blend," "Growth," "Value," "Varies By Country," or they can choose not to report a style. Similarly, managers identify with one of the

following capitalization focuses: “Broad/Combination,” “Large,” “Mid,” or “Not Reported.” Many pension funds are concerned with measuring a manager’s performance relative to a benchmark, and managers have the opportunity to suggest the most appropriate benchmark. The most popular benchmarks include the MSCI World Index and the MSCI AC World Index, though one quarter of managers do not provide a recommended benchmark. Managers also report the assets under management (AUM) for each portfolio, though this number is reported somewhat sporadically. Some managers report AUM for every quarter they are active, some report AUM once per year, and some do not report it. “Manager Experience” is also reported inconsistently. Even if an investment professional is listed as the manager of a given portfolio, the professional’s role in managing the portfolio is questionable. For instance, Dimensional Fund Advisors list their CEO, David Booth as one of the investment professionals for each of its portfolios. Thus, this field in the database is not very reliable. Finally, fees are more difficult to account for when studying institutional money managers. A fund’s management fee will almost always depend on the amount of assets a plan sponsor commits to a fund. A large investment will usually result in a lower management fee (as a percent of total assets). Additionally, over one-quarter of managers do not report any fee. Unlike mutual funds, fees for institutional clients can be negotiable, so some managers do not report a fee schedule. Typical fees range between 0.5-0.75% of assets annually. Summary statistics on the global managers in our database can be found in Table 3, and simple return statistics for global managers can be found in Table 4. Most global managers claim the broadest style and capitalization focus. Similarly, most managers recommend the MSCI World Index or the MSCI AC World Index as their appropriate benchmark. Appendix A presents the data provided by a typical manager. Many of the fields are typically left blank, but it is at the discretion of the portfolio manager.

Additionally, we obtain data from Ken French's data library. He regularly computes portfolio returns based on stock characteristics, and we use a set of his portfolios as our risk factors. For US equity, we use the standard Fama-French Factors for market-oriented risks, size-oriented risks, and value-oriented risks. The market factor is the monthly value-weight return on all stocks listed on the NYSE, AMEX, and NASDAQ less the one-month Treasury bill rate. To obtain the size and value portfolios, stocks are ranked into six portfolios based on size and book-to-market, respectively. The size factor is defined as the average of the three "small" portfolios minus the average of the three "big" portfolios, and is commonly referred to as "small-minus-big," or SMB. The value factor is defined as the average of the two value portfolios less the average of the two growth portfolios and is called "high-minus-low," or HML. Similarly, the momentum factor is defined as the average of the two high prior return portfolios minus the two low prior return portfolios, and is commonly referred to as "winners-minus-losers," or WML.

The methodology is similar for creating factors for the international market. The international market is generally referred to as "Europe, Australasia, and Far East," or EAFE. We include a market factor and a value factor for the EAFE market.

Section 3.2 Classical Techniques

We conduct three separate tests and look for evidence of skill. The first test is akin to the classical performance evaluation done by Jensen (1967). We regress all reported returns for each global manager on K factors and estimate the following model:

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where r is the return on portfolio p, and f_k is the k-th factor return. If a manager has 48 months of returns, our regression includes all 48 months. The same is true if a manager only has 8 months or has 200 months. The model is estimated for each of the 281 portfolios in our data set. We used two separate models for this test: the 4 Factor model uses the US market's excess returns, the EAFE market's excess returns, the US HML portfolio, and the EAFE HML portfolio as risk factors; the 6 Factor model employs all of the factors in the 4 Factor model in addition to a factor for the US SMB portfolio and a factor for the US WML portfolio. All of these factors are obtained from Ken French's web site. Alpha (α) is thought of as a manager's risk-adjusted return—the portion that cannot be explained by the risks a manager takes.

After we perform tests on the managers' entire set of returns, we evaluate each manager's risk-adjusted returns each year. If a manager reports at least 8 months of returns in a given year, we estimate the following model:

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where r is the return on portfolio p, and f_k is the k-th factor return. For global managers, we estimate three different models using this methodology. The first model is the 2 Factor model, where we regress a portfolio's excess returns on the US market's excess returns and the EAFE market's excess returns. The 4 Factor model includes the factors in the 2 Factor model in addition to the US HML portfolio and the EAFE HML portfolio. The 6 Factor model includes the factors in the 4 Factor model in addition to the US SMB portfolio and the US WML portfolio. For US managers, we employ the same methodology but our model is the Carhart 4-Factor model, which includes risk factors for the US market's excess returns, the US HML portfolio, the US SMB portfolio, and the US WML portfolio. Finally, NUS managers are evaluated using a 2 Factor model including the EAFE market's excess

returns and the EAFE HML portfolio. By estimating parameters each year, we are able to see how exposures change among the different groups of managers. We can also tell if the average manager year's alpha is statistically different from zero.

Section 3.3 Tests of Persistence

The thrust of our analysis evaluates a manager's ability to persistently deliver positive risk-adjusted returns. In order to do this, each year we rank every active manager by their risk-adjusted return (alpha). We form deciles based on a manager's alpha, and we compute the equal-weighted return of each decile in the formation period (t=0). After we have constructed deciles for a given year, we follow each decile and compute their equal-weighted alpha in years t=1, t=2, and t=3. This process is repeated for every year in our sample of 1989-2007. This leaves us with 19 separate formation years (1989-2007), 18 periods where t=1 (1990-2007), 17 periods where t=2 (1991-2007), and 16 periods where t=3 (1992-2007). For each decile we analyze performance in years 0, 1, 2, and 3. We run into problems when estimating our 6-Factor model since we only require 8 months of returns—this requires us to use most of our degrees of freedom, resulting in very imprecise estimates. To explore this issue, we repeat the above analysis using 36-month formation periods and 36-month evaluation periods. Figure 1 illustrates the differences in our two methods. Using 36-month periods, we have 17 formation periods (1989-1991, 1990-1992, etc), 14 periods where t=1 (1992-1994, 1993-1995, etc), 13 periods where t=2, and 12 periods where t=3. This technique does result in overlapping periods, which should build in some level of persistence. That is, if the first evaluation period is 1992-1994 and the second evaluation period is 1993-1995, two of the three years overlap between the first and second evaluation period. If a portfolio can deliver positive risk adjusted returns from 1992-1994, then that portfolio is likely to deliver positive risk-adjusted returns from 1993-1995 unless 1995 is a

bad year. This relationship would seem to result in persistence by construction, provided a manager can beat the market in t=1.

Section 3.4 Timing Tests

The last piece of our analysis tests a global manager's ability to time the market. If a manager can successfully time the US market, for example, his returns should have a positive, quadratic relationship with general market movements. We test for this relationship by estimating the model:

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where r is the return on portfolio p, and f_k is the k-th factor return. We include factors for the US market's excess return, the squared term of the US market's excess return, the EAFE market's excess return, and the squared term of the EAFE market's excess return. We refer to the coefficient on the squared term of the US market's excess return as the "US Gamma", and we refer to the coefficient on the squared term of the EAFE market's excess return as the "EAFE Gamma". If a manager can "outguess" the US market, then his US Gamma should be positive and statistically distinguishable from zero. Likewise, his EAFE Gamma should be positive and nonzero if he can time the EAFE market.

CHAPTER 4

RESULTS

Section 4.1 Full Panel Regressions

The results of our full panel regressions are found in Table 5. Of the 281 global equity managers with enough returns to estimate our two models we find that, on average, global managers are able to deliver positive risk-adjusted returns between 2.52% and 2.88% annually. This is not a trivial amount and it is well above the typical annual management fee of 0.5-1.0%. The alphas are statistically different from zero and economically significant in both the 4-Factor and 6-Factor model. Additionally, the average exposures to the US market and the EAFE market are nearly identical for both models. The 6-Factor model, however, seems to make a significant contribution toward explaining the source of global equity returns. While the average R^2 value hardly changed when moving from the 4-Factor model to the 6-Factor model, the average exposures to the US HML and EAFE HML change significantly with the addition of the US SMB and the US WML factors. In the 4-Factor model, the exposure to the two HML portfolios is not statistically or economically significant, but in the 6-Factor model the exposure to both HML portfolios approaches statistical significance. Additionally, the US WML portfolio is statistically significant in the 6-Factor model. This suggests that managers are able to invest in the prior year's winners and subsequently improve their returns the following year. It should be noted, however, that this could be a result of the survivorship bias in the sample. Portfolios that held last year's losing stocks could be dropped from the database due to poor performance, leaving only the survivors with better prior-year performance in the database.

The distribution of the alphas for the 4-Factor and 6-Factor models can be seen in Figure 2. Both distributions appear to be approximately normal and centered slightly above one. Consistent with what has already been mentioned, the distribution of the 6-Factor alphas appears to be tighter than that of the 4-Factor alpha, which is evidence that global managers are exposing themselves to the US SMB and WML factors. While we do not have factors for the EAFE SMB and WML factors, it is difficult to tell if the alpha distribution would change significantly with the addition of these theoretical factors. If small stocks and prior winners are considered to be more risky than large stocks and prior losers, then the US SMB and WML factors should be positively correlated with the EAFE SMB and WML portfolios. Suppose this was not the case—then investors could diversify away the SMB and WML risk by investing in the US and EAFE SMB and WML portfolios, but this would be contrary to the belief that investors should only be compensated for systematic risk. Rather, correlated US and EAFE risk factors imply that the alpha distribution would not change significantly with the addition of theoretical EAFE SMB and WML factors.

Section 4.2 Manager Year Results

The next step in the analysis is to compute an alpha for each manager year in the sample. The results of our estimations are found in Table 6. We find that the global 2-Factor model implies an annual risk-adjusted return of 1.92%, but the global 4-Factor model implies an annual risk-adjusted return of only 0.72%, which is near a typical management fee. Furthermore, the global 6-Factor model yields an alpha indistinguishable from 0.00%. These numbers are in stark contrast to the US 4-Factor model and the NUS 2-Factor model, which imply annual risk-adjusted returns of 1.8% and 2.76%, respectively.

The addition of HML, SMB, and WML factors to the global models seem to significantly increase the explanatory power of the model. With the addition of the US SMB and WML portfolios, the US HML exposure becomes statistically significant and the US SMB and WML factors are also significant and positive. Again, this could be the result of a survivorship bias since the database drops losing portfolios that likely selected last year's losing stocks. No matter what model we estimate, the average exposures to the US market and the EAFE market remain largely unchanged and nearly sum to one.

Estimating the global models annually allow us to view changes in global managers' styles over time. Table 7 lists the number of active portfolios for each year in the sample. Since 2001 the number of global portfolios has grown faster than the number of US portfolios each year, while the number of NUS portfolios grew at about the same rate as global portfolios. Figure 3 demonstrates how the average global manager's exposures change over the period of 1989-2007. For each panel we only present exposures for the added factors—that is, in the 4-Factor model we only show exposures to the US HML and the EAFE HML, even though the 4-Factor model also includes the US market and EAFE market factor. We do this because the exposures tend not to change substantially as we add other factors. The most obvious pattern is the increasing exposure to the EAFE market, which corresponds to decreasing exposure to the US market. The two exposures intersect around the time of the technology bubble, but after 2003 global managers have consistently increased their exposure to the EAFE market while decreasing their exposure to the US market. This pattern is not surprising as many international markets have begun to open up in the past ten years and the domestic market is very competitive for equity managers. Additional factors for HML, SMB, and WML are much smaller and noisier. Both the US and the EAFE HML exposures tend to stay above zero, but with

fairly wide fluctuations across years. The US SMB exposure also tends to stay above zero but is much less noisy. Finally, the US WML exposure seems to oscillate around zero.

Section 4.3 Persistence among Global Managers

The next sets of tests evaluate performance persistence among institutional equity managers. From a plan sponsor's perspective, it is not particularly helpful to know that global managers can deliver positive risk-adjusted returns over the course of their lifetime. Rather, a plan sponsor would like to predict which managers are most likely to beat the market in the future. Our persistence tests rank managers in deciles during the formation year and follow each decile into subsequent periods. If managers are persistent, then the top managers in one period should deliver positive risk-adjusted returns in subsequent periods. Likewise, the worst managers in one period should deliver negative risk-adjusted returns in subsequent periods. Table 8 shows the results of our persistence tests when we rank global managers in 12-month periods and then evaluate each decile in each of the following three years. The top decile seems to display persistence in the first evaluation period for each of the three models we test, and its risk-adjusted return is estimated to be between 3.12% and 3.84% annually. Additionally, the spread between the top and bottom decile is statistically different from zero in the first evaluation period and is estimated to be between 2.40% and 4.68% annually. This persistence does not continue into the second or third evaluation periods, nor is there any sign of persistence among any of the other deciles regardless of the model we use. The second decile, for instance, is estimated to only have an annual risk-adjusted return between 0.12% and 1.08% in the first evaluation period, though this is not statistically different from zero.

As previously mentioned, our annual tests may be imprecise since we only require eight months of returns to compute two-, four-, and six-factor models. We use 36-month ranking and

evaluation periods to account for this. The results of our persistence tests for global managers using 36-month portfolio formation periods and 36-month evaluation periods are found in Table 9. This is a fairly demanding test because in order to show persistence a manager would have to outperform the market over two back-to-back three-year periods, which is considered very long-term in the literature. We find no evidence of performance persistence among the top deciles, but we document a very strong reversal in alpha among the worst-ranked decile. This reversal is consistent with a world where fund survival is dependent on multiple years of returns. The bottom deciles had to outperform the market in evaluation periods lest they go out of business and disappear from our database. This demonstrates a limitation in using the spread between the top and bottom decile as a measure of performance persistence using survivorship-biased data—since the bottom decile is prone to reversals and biased upward, the spread does not accurately measure the true difference between the best performers and the worst performers in a given period.

Section 4.4 Persistence among US and NUS Managers

We perform similar analysis on the sample of US and NUS managers, and the results are reported in Table 10. The highest-ranked 50% of US managers demonstrate fairly reliable performance persistence during the following three one-year ranking periods. The second evaluation period is the only period where the spread between the top decile and the bottom decile is not statistically significant. This does not appear to be the result of an underperformance among the top decile (the top decile has the highest average alpha in year two), but there appears to be a slight reversal among the lowest-ranked decile. The NUS managers demonstrate a similar pattern for the first two evaluation periods. The top 50% of NUS managers demonstrate fairly reliable persistence for two years, but a slight reversal among the bottom decile yields a spread that is not statistically

different from zero. In any case, the top decile of US and NUS managers earn the highest average alpha in all three evaluation periods whereas the top ranked global managers are shuffled around in the rankings after the first evaluation period.

These results are counter to the "Fundamental Law of Active Management" and are a bit of a puzzle. If there are two identical managers with identical information, then a manager with a broader mandate should be able to outperform the constrained manager. Since our results show the more constrained US and NUS managers outperforming the global managers, we next perform tests to determine if cross-sectional differences among global managers are affecting our results. There are four characteristics that we suspect may help explain returns: management fees, assets under management, investment mandate, and time period.

Section 4.5 Cross-Sectional Persistence Tests

Management fees are almost always discussed in articles on performance evaluation. Sharpe (1966) found that fees are better predictors of a manager's future Sharpe ratio than the manager's characteristic line. Elton, Gruber, and Blake (1995) find that the lowest decile of mutual fund managers tend to have very high expenses that partially explain their poor performance, and Daniel, Grinblatt, Titman, and Wermers (1997) find that the average mutual fund beats a purely mechanical strategy by the average management fee. Since our results are gross of management fees, we expect that, among the top deciles, managers with high fees should outperform managers with low fees. High fees allow managers to conduct more research and contribute more to their gross-of-fees risk-adjusted returns. The results of our test are found in Table 11, Panel A. We find that, among the top few deciles, managers with high fees tend to have higher estimates of their risk-adjusted returns than managers with low fees for each model and across all three evaluation periods. However, neither the

high-fee managers nor the low-fee managers display the same levels of performance persistence as the US and NUS managers. The top decile of high-fee managers tend to display persistence for the first evaluation period, but persistence disappears after the first period and no other decile displays any evidence of persistence. The top decile of low-fee managers displays very similar patterns—only the top managers display persistence in the first period, after which it disappears.

Panel B shows the results when we split managers by their assets under management (AUM). Again, there is a substantial precedent in the literature to observe how assets affect performance. Busse, Goyal, and Wahal (2006) hypothesize that funds with superior performance in one period tend to attract capital flows the next period. Diseconomies of scale in investment management thus eliminate persistence in subsequent years—manager talent is dissipated as assets increase. This leads us to predict that managers with low assets are more nimble and thus more capable of delivering persistent risk-adjusted returns than managers with high assets, who may not find enough opportunities for mispriced securities to deliver persistent alpha. Panel B shows little evidence of performance persistence among either the low AUM managers or the high AUM managers. Even the top decile of managers do not deliver statistically significant risk-adjusted returns in the first evaluation period with the exception of the 4 Factor model low AUM managers. We conclude that AUM does not explain the difference in persistence between global and US/NUS managers.

The third test separates managers by mandate. Managers with a broad style and capitalization mandate are considered to have a broad mandate, whereas managers with a particular focus (Value, Growth, Large-cap, Mid-cap, etc) are classified as narrow mandates. It is conceivable that a manager's mandate affects the marketing pitch of the product—a narrow mandate could be a way for a plan sponsor to more precisely control the plan's exposures. A broad mandate, on the other hand,

would allow a manager to best take advantage of Grinold's "Fundamental Law of Active Management" in order to deliver risk-adjusted returns. Panel C of Table 11 presents our findings for the two groups of managers. We find that managers with a narrow mandate display almost no sign of persistence in any of the evaluation periods using any of the models. Managers with a broad mandate, however, display relatively reliable persistence when compared to the rest of global managers. The top decile displays persistence in the first, second, and third evaluation periods. This persistence, however, is almost completely confined to the top decile and the 2 Factor and 4 Factor models. When we add factors for the US SMB and US WML, persistence among managers with a broad mandate all but disappears. US and NUS managers demonstrate more reliable persistence than global managers even after we divide global managers by mandate.

Finally, we divide global managers' returns by time period. Returns that were earned between 1989 to 1999 are kept separate from those earned from 2000 to 2007, and the results are in Panel D of Table 11. Global markets behaved differently in the 90s, and many markets have since opened up for trade. Furthermore, the technology bubble at the turn of the century provided firms with the means to cheaply communicate and operate on a global scale. As markets integrate and geographical differences appear less important, global managers may be able to beat benchmarks that are constructed by geography. We find no evidence that global managers could display superior persistence in 2000-2007 vs. 1989-1999, and this distinction does not help us explain the more reliable persistence among US and NUS managers over global managers.

Section 4.6 Timing Results

While global managers do not seem able to persistently beat their risk benchmarks, it is possible that they can add value in another way. Global managers are distinct from US and NUS

managers because they have the ability to shift assets into the US when they predict that the US will outperform the NUS market, or they can shift assets out of the US when they feel that the US will underperform. This characteristic of global managers may give them a better ability to time the markets. While US managers can try to outguess the market by shifting into riskier stocks before an upturn, they may be constrained by style and capitalization mandates. Global managers are, by their nature, less constrained. If global managers can outguess either the US or EAFE market, there should be a positive quadratic relationship between the manager's returns and the market's returns. The coefficient on the squared term in the regression is referred to as "Gamma." Figure 4 displays the histogram of the global managers' US and EAFE Gammas. We find that global managers are not able, as a whole, to time either the US or EAFE market. It is possible, however, that only a small set of managers are attempting to outguess the market while the rest rely on identifying security mispricing. To check for this, we perform persistence tests on managers' US and NUS Gammas. Table 12 lists the results of these tests. We find that the top decile of global managers is unable to persistently deliver positive and nonzero gammas.

CHAPTER 5

CONCLUSION

This paper examines the performance of 287 global equity portfolios relative to 3650 US and 1745 NUS portfolios from 1989 to 2007. Global managers are a relatively new phenomenon in institutional investing, and this small group is gaining considerable attention. Many practitioners believe that global managers provide a more efficient way to allocate a plan's assets because increased integration in global markets makes the distinction between US and NUS stocks increasingly arbitrary, and an increase in a manager's breadth of decisions should correspond to an increase in risk-adjusted return.

Despite the arguments for global managers, we find limited evidence of their skill. Furthermore, global managers are regularly dominated by US and NUS managers when we perform identical tests on each of these three sets of managers. When we perform classical tests of performance evaluation, we find that global managers tend to deliver positive risk-adjusted returns over the life of the portfolio. These returns are statistically and economically significant, generally greater than the typical management fee of 0.50-1.00% of assets. We also find that the addition of US SMB and WML risk factors makes a significant contribution to our ability to explain a manager's returns. While these initial results bode well for global managers, we find that the average US and NUS manager generally perform much better with similar performance tests.

US and NUS managers also demonstrate more reliable performance persistence than global manages. US managers show evidence of persistence for up to three years, and NUS managers tend to persist for about two years. Global managers, however, display signs of persistence in only the top

decile of managers in only the first evaluation year. This result is robust to changes in the risk benchmark we use for global managers. Additionally, this result holds for differences in management fees, assets under management, investment mandate, and time period. We could not find a method by which a global manager's future risk-adjusted returns could be predicted. Rather, winning global portfolios are typically reshuffled each period.

The last set of tests sought to determine a global manager's timing ability. We found no evidence that global managers could outguess either the US or EAFE market. Additionally, there does not appear to be a subset of managers who can persistently time the markets. Even though this is an oft-cited advantage of global managers, the added manager flexibility does not translate into higher risk-adjusted returns.

Implications of this study face limitations due to the sample survivorship bias. While this cannot be ignored, it is also important to realize that a survivorship bias will tend to bias returns upward and increase the perception of persistence. In this sense, the global managers in our sample should be able to demonstrate persistence more easily than if our data was free of survivorship bias. The fact that we still could not find evidence of reliable persistence is damaging to the case for global managers. Future study should be done to determine if there is evidence of dissipation in global manager skill. These global funds have been receiving increasingly large amounts of attention year-over-year, and this may have resulted in an influx of capital. If global funds have grown faster than US and NUS funds, then skill amongst the global managers could have been more quickly diluted, leading to less evidence of persistence.

BIBLIOGRAPHY

Admati, Anat R., Sudipto Bhattacharya, Paul Pfleiderer, and Stephen A. Ross. "On Timing and Selectivity." The Journal of Finance (July 1986): 715-730.

Barnes, Mark A., Anthony Bercel, and Steven h. Rothmann. "Global Equities: Do Countries Still Matter?" The Journal of Investing (2001): 43-49.

Berk, Jonathan and Richard Green. "Mutual Fund Flows and Performance in Rational Markets." Journal of Political Economy (2004): 1269-1296.

Brooks, Robin and Marco Del Negro. "The Rise in Comovement Across National Stock Markets: Market Integration or IT Bubble?" Journal of Empirical Finance (2004): 659-680.

Brown, Stephen J., William Goetzmann, Roger G. Ibbotson, and Stephen A. Ross. "Survivorship Bias in Performance Studies." Review of Financial Studies (1992): 553-580.

Busse, Jeffrey A., Amit Goyal, and Sunil Wahal. "Performance Persistence in Institutional Investment Management." (June 2006).

Carhart, Mark M. "On Persistence in Mutual Fund Performance." Journal of Finance (March 1997): 57-82.

Carpenter, Jennifer N. and Anthony W. Lynch. "Survivorship Bias and Attrition Effects in Measures of Performance Persistence." Journal of Financial Economics (1999): 337-374.

Cavaglia, Stefano, Jeffrey Diermeier, Vadim Moroz, and Sonia DeZordo. "Investing in Global Equities." The Journal of Portfolio Management (Spring 2004): 88-94.

Chevalier, Judith and Glenn Ellison. "Are Some Mutual Fund Managers Better Than Others? Cross-Sectional Patterns in Behavior and Performance." The Journal of Finance (1999): 875-899.

Coggin, T. Daniel, Frank J. Fabozzi, and Shafiqur Rahman. "The Investment Performance of U.S. Equity Pension Fund Managers: An Empirical Investigation." The Journal of Finance (July 1993): 1039-1055.

Daniel, Kent, Mark Grinblatt, Sheridan Titman, and Russ Wermers. "Measuring Mutual Fund Performance with Characteristic-Based Benchmarks." The Journal of Finance (July 1997): 1035-1058.

Elton, Edwin J., Martin J. Gruber, and Christopher R. Blake. "The Persistence of Risk-Adjusted Mutual Fund Performance." (1995).

Fama, Eugene F. and Kenneth R. French. "The Cross-Section of Expected Stock Returns." Journal of Finance (June 1992): 427-465.

Griffin, John M. and G. Andrew Karolyi. "Another Look at the Role of the Industrial Structure of Markets for International Diversification Strategies." Journal of Financial Economics (1998): 351-373.

Grinold, Richard C. "The Fundamental Law of Active Management." The Journal of Portfolio Management (Spring 1989): 30-37.

Hendricks, Darryll, Jayendu Patel, and Richard Zeckhauser. "Hot Hands in Mutual Funds: Short-Run Persistence of Relative Performance, 1974-1988." The Journal of Finance (March 1993): 93-130.

Hou, Kewei, G. Andrew Karolyi, and Bong Chan Kho. "What Factors Drive Global Stock Returns?" (2007).

Jensen, Michael C. "The Performance of Mutual Funds in the Period 1945-1964." Journal of Finance (1967): 389-416.

Sharpe, William F. "Asset Allocation: Management Style and Performance Measurement." Journal of Portfolio Management (Winter 1992): 7-19.

—. "Mutual Fund Performance." The Journal of Business (1966): 119-138.

Speidell, Lawrence S., and Hongyu Xing. "One World--The Case for Global Portfolios." The Journal of Investing (Spring 2004): 5-13.

Treynor, Jack L. and Kay K. Mazuy. "Can Mutual Funds Outguess the Market?" Harvard Business Review (1966): 131-136.

Treynor, Jack L. "How to Rate Management of Investment Funds." Harvard Business Review (1965): 63-75.

Table 1: Descriptive Statistics

This table presents descriptive statistics on the sample of global, US, and non-US institutional investors found in the Wilshire Compass database. The sample period is 1989 through 2007. Due to the survivorship bias of the database, the attrition rate is zero. Portfolio size is in millions of dollars.

	Global Managers	US Managers	NUS Managers
Number of Managers	171	962	464
Number of Portfolios	287	3650	1745
Avg. Number of Portfolios per year	101	1580	628
Avg. Size of Portfolio ($MM)	1890	30800	12300
Attrition Rate	0.00%	0.00%	0.00%

Table 2: Return Statistics

This table presents summary statistics for the raw monthly returns of global, US, and non-US institutional investors over the entire sample period of 1989-2007. The Sharpe Ratio is defined as a manager's average monthly return divided by the manager's monthly standard deviation.

	Global Managers	US Managers	NUS Managers
Mean	0.948%	0.821%	1.32%
Median	1.30%	1.04%	1.56%
Percent positive	63.6%	62.0%	66.2%
Standard deviation	3.99%	4.25%	4.19%
Sharpe Ratio	0.252	0.224	0.328
Average Number of Months per manager	84.0	96.6	85.7

Table 3: Cross-Sectional Descriptive Statistics

This table presents descriptive statistics on global equity managers found in the Wilshire Compass database. Managers are separated by investment style, capitalization focus, average assets under management over the sample period, fee range on a $75 million contribution, manager experience, years of returns in database, and recommended benchmark. Each field is self-reported by the investment manager. To obtain the manager experience, we take the maximum industry experience of the "Investment Professionals" listed for the portfolio.

	Number of Managers	Avg. Months Available	Avg. AUM ($MM)	Managers with at least 1 year of returns	Managers with at least 3 years of returns	Managers with at least 5 years of returns
Style Focus						
Core / Blend	121	79.58	1432.65	112	84	64
Growth	70	97.31	1792.87	68	55	48
Value	76	90.17	2999.46	72	60	44
Varies By Country	3	122.67	1188.03	3	3	3
Not Reported	17	83.24	731.95	17	16	14
Capitalization Focus						
Broad / Combination	147	85.80	1707.79	138	108	85
Large	115	87.47	1837.30	110	87	66
Mid	6	97.17	3250.21	5	4	4
Not Reported	19	95.95	3362.48	19	19	18
Assets Under Management						
$0-100MM	83	66.12	38.91	74	47	38
$100-1000MM	110	83.84	417.07	106	85	68
$1000+ MM	91	113.16	5401.60	91	85	66
Not Reported	3	23.00	0.00	1	1	1
Fee Range on $75MM						
0.0-0.5%	12	67.50	998.11	11	8	8
0.5-0.75%	131	97.30	2396.89	126	102	84
0.75-1.0%	47	88.70	1478.63	42	36	27
1.0-1.25%	10	63.90	357.78	10	5	3
1.25%+	8	74.25	586.62	8	7	5
Not Reported	79	77.46	1778.13	75	60	46

Table 3: Cross-Sectional Descriptive Statistics (continued)

	Number of Managers	Avg. Months Available	Avg. AUM ($MM)	Managers with at least 1 year of returns	Managers with at least 3 years of returns	Managers with at least 5 years of returns
Recommended Benchmark						
MSCI World Index	130	97.32	1900.39	121	99	84
MSCI AC World Index	32	76.09	3109.86	31	23	16
MSCI AC World Ex-US Index	11	94.36	1055.65	11	11	10
MSCI EAFE Index	11	73.91	1717.02	11	8	7
MSCI World Growth	6	56.50	1287.05	6	3	1
MSCI World Ex US Index	3	105.33	163.18	3	3	2
MSCI World Ex USA Growth	3	31.33	80.56	3	1	0
MSCI World Value	2	24.50	524.98	2	0	0
Nareit EPRA Nareit Global Index	2	100.00	313.07	2	1	1
Other	15	81.67	1049.03	13	9	8
Not Reported	72	82.18	1966.51	69	60	44
Manager Experience						
<10 years	2	22.00	69.21	2	0	0
10-15	7	63.29	327.88	7	5	3
15-20	33	77.06	1289.13	32	20	16
20-25	54	83.52	1731.14	53	46	32
25-30	69	95.00	1913.98	67	57	47
30-35	32	114.13	4007.85	32	27	23
35-40	22	105.05	2834.43	21	19	16
over 40	24	108.13	1372.75	23	21	18
Not Reported	44	55.09	1127.71	35	23	18
Years of Returns in Database						
1-3 years	54	23.24	377.08	54	0	0
3-5 years	45	46.98	1758.96	45	45	0
Less than 1 year	15	5.93	114.47	0	0	0
Over 5 years	173	124.97	2555.43	173	173	173
Grand Total	287	87.38	1897.03	272	218	173

Table 4: Cross-Sectional Return Statistics

This table presents descriptive statistics on the raw monthly returns of global equity managers found in the Wilshire Compass database. Managers are separated by investment style, capitalization focus, average assets under management over the sample period, fee range on a $75 million contribution, manager experience, years of returns in database, and recommended benchmark. Each field is self-reported by the investment manager. To obtain the manager experience, we take the maximum industry experience of the "Investment Professionals" listed for the portfolio. Summary statistics are averaged over all managers with a particular label. For example, there are 70 "Growth" managers and each has a historical standard deviation. The average of these 70 historical standard deviations is 4.73, which is listed in the table below. Skewness is calculated as $G_1 = \frac{k_3}{k_2^{3/2}} = \frac{\sqrt{n\,(n-1)}}{n-2}\,g_1,$ and kurtosis is computed as $= \frac{(n+1)\,n}{(n-1)\,(n-2)\,(n-3)}\,\frac{\sum_{i=1}^{n}(x_i-\bar{x})^4}{k_2^2} - 3\,\frac{(n-1)^2}{(n-2)(n-3)},$ where k_2 is the sample variance. The Sharpe Ratio is the manager's average return divided by his/her standard deviation of returns.

	Avg. Return	Percent Positive	Standard Deviation	Skew	Kurtosis	Sharpe Ratio
Style focus						
Core / Blend	0.84	0.63	3.85	-0.53	0.88	0.23
Growth	1.07	0.63	4.73	-0.28	2.13	0.24
Value	1.03	0.64	3.92	-0.52	0.99	0.26
Varies By Country	1.20	0.72	2.99	-0.44	0.76	0.45
Not Reported	0.78	0.68	2.40	-0.56	1.35	0.35
Capitalization focus						
Broad / Combination	1.00	0.64	4.00	-0.42	1.49	0.26
Large	0.92	0.63	4.11	-0.52	0.95	0.23
Mid	0.49	0.59	5.12	-0.58	1.00	0.08
Not Reported	0.88	0.68	2.75	-0.49	1.16	0.34
AUM ($MM)						
$0-100MM	0.86	0.62	4.11	-0.39	0.97	0.22
$1000+ MM	1.01	0.64	3.94	-0.52	1.07	0.28
$100-1000MM	0.99	0.64	3.95	-0.49	1.61	0.26
Not Reported	-0.54	0.48	3.23	-0.08	0.14	-0.05
Fee Range on $75MM						
0.0-0.5%	0.59	0.61	4.56	-0.46	0.55	0.14
0.5-0.75%	0.88	0.63	3.97	-0.55	1.54	0.23
0.75-1.0%	1.06	0.64	4.23	-0.46	0.94	0.26
1.0-1.25%	1.55	0.64	5.89	-0.20	1.69	0.26
1.25%+	1.23	0.65	4.08	-0.26	0.16	0.30
Not Reported	0.94	0.65	3.53	-0.38	1.08	0.29

Table 4: Cross-Sectional Return Statistics (continued)

	Avg. Return	Percent Positive	Standard Deviation	Skew	Kurtosis	Sharpe Ratio
Suggested Benchmark						
MSCI World Index	0.89	0.63	4.02	-0.50	1.55	0.23
MSCI AC World Index	0.87	0.62	3.94	-0.39	0.63	0.24
MSCI AC World Ex-US Index	1.19	0.65	4.37	-0.50	0.56	0.28
MSCI EAFE Index	1.24	0.65	4.55	-0.61	0.86	0.27
MSCI World Growth	1.17	0.67	4.09	-0.59	1.16	0.30
MSCI World Ex US Index	1.09	0.64	4.35	-0.64	1.27	0.24
MSCI World Ex USA Growth	0.87	0.63	3.58	-0.49	1.13	0.33
MSCI World Value	0.78	0.64	3.34	-0.79	0.53	0.23
Nareit EPRA Nareit Global Index	0.63	0.67	4.11	-0.66	0.21	0.16
Other	0.78	0.61	3.94	-0.45	1.40	0.21
Not Reported	1.03	0.65	3.82	-0.39	1.16	0.29
Manager Experience						
<10 years	1.39	0.70	5.37	-1.07	1.36	0.27
10-15	0.88	0.64	3.30	-0.38	0.08	0.32
15-20	0.73	0.61	3.75	-0.43	0.92	0.18
20-25	1.01	0.64	3.94	-0.52	0.89	0.28
25-30	0.99	0.64	4.14	-0.44	1.81	0.25
30-35	1.07	0.65	3.86	-0.51	1.73	0.29
35-40	1.07	0.66	3.84	-0.62	1.41	0.29
over 40	0.91	0.63	3.93	-0.46	0.89	0.26
Not Reported	0.85	0.62	4.24	-0.35	0.96	0.22
Years of Returns Available						
Less than 1 year	-0.61	0.47	4.38	-0.12	0.10	-0.15
1-3 years	0.93	0.63	3.72	-0.66	0.76	0.25
3-5 years	1.24	0.67	3.43	-0.48	0.38	0.37
Over 5 years	0.98	0.64	4.19	-0.43	1.68	0.25
Grand Total	0.95	0.64	3.99	-0.47	1.24	0.25

Table 5: Full Panel Regression Coefficients

Four and six factor models are estimated for the entire time series of each global equity manager using the factor model:

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t periods. The factors for the four factor model are the US market's excess return, the EAFE market's excess return, the US high-minus-low (HML) portfolio, and the EAFE HML portfolio. The factors for the six factor model are the US market's excess return, the EAFE market's excess return, the US HML portfolio, the EAFE HML portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. All factors are taken from Ken French's data library. Alphas are in percent per month. Regression coefficients below are the average of all global equity managers in the sample. Numbers in parenthesis next to the regression coefficients are their t-statistics. The sample period is 1989-2007.

		Factor Model	
		4 Factor	6 Factor
Coefficients:	α_p^U Alpha	0.24 (7.12)	0.21 (4.44)
	$\beta_{p,1}$ US Market	0.39 (17.6)	0.39 (18.8)
	$\beta_{p,2}$ EAFE Market	0.57 (26.5)	0.56 (27.2)
	$\beta_{p,3}$ US HML	0.01 (0.73)	0.04 (1.84)
	$\beta_{p,4}$ EAFE HML	0.00 (0.01)	0.04 (1.68)
	$\beta_{p,5}$ US SMB		0.03 (1.50)
	$\beta_{p,6}$ US WML		0.06 (3.74)
	Avg. r-sq	0.80	0.83
	Number of Portfolios	281.00	281.00

Table 6: Average Coefficients per Manager Year

Two, four, and six factor models are estimated each year for every global equity manager in the sample period using the factor model:

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Similarly, a four factor model was estimated for US managers, and a two factor model was estimated for NUS managers. Coefficients were computed for a given year if the manager reported at least 8 months of returns. The factors for the global two factor model are the US market's excess return and the EAFE market's excess return. The factors for the global four factor model are the US market's excess return, the EAFE market's excess return, the US high-minus-low (HML) portfolio, and the EAFE HML portfolio. The factors for the global six factor model are the US market's excess return, the EAFE market's excess return, the US HML portfolio, the EAFE HML portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. The factors for the US model are the US market's excess returns, US HML, US SMB, and US WML. The factors for the NUS model are the EAFE market's excess returns and the EAFE HML. Only the alpha coefficients are reported for the US and NUS models. All factors are taken from Ken French's data library. Alphas are in percent per month. Regression coefficients below are the average of all manager years. Numbers in parenthesis next to the regression coefficients are their t-statistics. The sample period is 1989-2007.

	Global Managers			US Managers	NUS Managers
	2 Factor	4 Factor	6 Factor	4 factor	2 factor
Avg. Alpha	0.16 (8.99)	0.06 (3.13)	0.01 (0.52)	0.15 (17.20)	0.23 (19.18)
Avg. US Mkt	0.43 (43.8)	0.44 (37.8)	0.41 (32.5)		
Avg. EAFE Mkt	0.53 (53.6)	0.51 (46.7)	0.53 (46.4)		
Avg. US HML		0.01 (1.05)	0.03 (2.32)		
Avg. EAFE HML		0.10 (6.96)	0.11 (7.06)		
Avg. US SMB			0.04 (4.26)		
Avg. US WML			0.05 (5.98)		
Avg. r-sq	0.82	0.88	0.93		
Manager Years	1977	1977	1977	29056	12304

Table 7: Active Portfolios per Year

This table presents the number of equity portfolios in the database for each year in the sample. A portfolio must have at least 8 months of reported returns in order to be counted in a given year.

Year	Global Portfolios	NUS Portfolios	US Portfolios
1989	12	79	157
1990	15	106	201
1991	19	131	264
1992	22	158	339
1993	25	191	441
1994	32	240	536
1995	46	308	746
1996	59	375	924
1997	68	446	1117
1998	81	548	1340
1999	98	638	1605
2000	110	721	1823
2001	131	815	2104
2002	153	923	2311
2003	174	1054	2575
2004	197	1159	2799
2005	223	1318	3068
2006	243	1462	3266
2007	269	1632	3440

Table 8: Post-Ranking One- to Three- Year Alphas

This table lists post-ranking alphas for deciles of global equity portfolios sorted by their alpha in the evaluation year. The ranking and evaluation periods are one year. The portfolio deciles are rebalanced at the end of every year and are held for one to three post-ranking years. Alphas are calculated from the factor model

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Coefficients were computed for a given year if the manager reported at least 8 months of returns. The factors for the two factor model are the US market's excess return and the EAFE market's excess return. The factors for the four factor model are the US market's excess return, the EAFE market's excess return, the US high-minus-low (HML) portfolio, and the EAFE HML portfolio. The factors for the six factor model are the US market's excess return, the EAFE market's excess return, the US HML portfolio, the EAFE HML portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. All factors are taken from Ken French's data library. The sample period is 1989-2007. All alphas are in percent per month and t-statistics are reported in parentheses next to alphas. Decile 1 contains the best performing portfolios in the evaluation period, and decile 10 contains the worst performing portfolios.

				Evaluation								
	Formation Period			First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.35 (9.37)	1.47 (8.06)	1.65 (8.42)	0.31 (2.22)	0.32 (1.86)	0.26 (1.97)	0.11 (0.77)	0.21 (1.39)	0.05 (0.36)	0.07 (0.57)	0.09 (0.53)	-0.22 (-1.35)
2	0.67 (8.87)	0.66 (8.32)	0.66 (8.56)	0.09 (1.10)	0.06 (0.73)	0.01 (0.10)	0.21 (2.34)	0.03 (0.21)	-0.12 (-1.02)	0.08 (0.98)	0.07 (0.52)	0.00 (0.04)
3	0.47 (7.03)	0.39 (6.18)	0.40 (5.72)	0.11 (1.17)	0.16 (1.48)	0.00 (0.01)	0.05 (0.52)	0.11 (1.29)	-0.03 (-0.25)	0.03 (0.32)	0.00 (0.07)	0.01 (0.08)
4	0.33 (5.15)	0.23 (3.90)	0.22 (2.97)	0.22 (2.34)	0.00 (-0.07)	0.08 (0.76)	0.21 (1.62)	0.04 (0.31)	-0.12 (-0.88)	0.07 (0.67)	0.04 (0.43)	-0.14 (-1.27)
5	0.20 (3.31)	0.12 (2.10)	0.09 (-1.20)	0.10 (1.38)	0.11 (1.76)	0.00 (0.00)	0.14 (2.11)	-0.02 (-0.26)	0.16 (1.19)	0.17 (1.65)	0.11 (1.20)	0.11 (0.79)
6	0.09 (1.50)	0.00 (0.02)	-0.04 (-0.53)	0.15 (1.78)	-0.01 (-0.17)	-0.06 (-0.79)	0.11 (1.34)	0.00 (0.05)	-0.07 (-0.65)	-0.00 (-0.07)	-0.00 (-0.02)	-0.04 (-0.52)
7	-0.03 (-0.65)	-0.13 (-2.33)	-0.17 (-1.98)	0.09 (1.02)	-0.01 (-0.19)	0.03 (0.24)	0.12 (2.00)	-0.01 (-0.15)	0.09 (1.05)	0.14 (2.27)	6.70 (0.00)	-0.00 (-0.01)
8	-0.18 (-3.08)	-0.30 (-4.50)	-0.32 (-3.45)	-0.02 (-0.24)	0.00 (-0.06)	0.01 (0.14)	0.19 (1.48)	0.07 (0.59)	-0.06 (-0.50)	0.16 (2.10)	0.01 (0.13)	0.02 (0.25)
9	-0.38 (-5.36)	-0.49 (-6.04)	-0.57 (-5.64)	0.18 (1.87)	0.01 (0.19)	-0.08 (-0.62)	0.11 (1.26)	0.00 (-0.01)	-0.03 (-0.43)	0.19 (1.73)	-0.10 (-1.07)	-0.12 (-0.96)
10	-0.86 (-8.13)	-1.03 (-7.40)	-1.21 (-7.00)	0.07 (0.63)	-0.07 (-0.54)	-0.13 (-1.16)	0.22 (1.85)	0.05 (0.53)	-0.07 (-0.69)	0.38 (2.15)	0.04 (0.34)	-0.00 (-0.07)
Spread	2.25 (12.10)	2.58 (12.30)	2.87 (9.64)	0.20 (1.38)	0.37 (1.94)	0.39 (2.99)	-0.08 (-0.40)	0.27 (1.11)	0.14 (0.84)	-0.33 (-1.89)	0.07 (0.46)	-0.17 (-1.28)

Table 9: Post-Ranking One- to Three- Year Alphas Using 36-month Ranking and Evaluation Period

This table lists post-ranking alphas for deciles of global equity portfolios sorted by their alpha in the evaluation period. The ranking and evaluation periods are three years. The portfolio deciles are rebalanced at the end of every year and are held for one to three post-ranking years. For example, a portfolio p is ranked using its returns from years 0-2. It is then evaluated with returns from years 3-5 (period one), 4-6 (period two), and 5-7 (period three). Alphas are calculated from the factor model

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Coefficients were computed for a given period if the manager reported at least 24 months of returns. The factors for the two factor model are the US market's excess return and the EAFE market's excess return. The factors for the four factor model are the US market's excess return, the EAFE market's excess return, the US high-minus-low (HML) portfolio, and the EAFE HML portfolio. The factors for the six factor model are the US market's excess return, the EAFE market's excess return, the US HML portfolio, the EAFE HML portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. All factors are taken from Ken French's data library. The sample period is 1989-2007. All alphas are in percent per month and t-statistics are reported in parentheses next to alphas. Decile 1 contains the best performing portfolios in the evaluation period, and decile 10 contains the worst performing portfolios.

				Evaluation								
	Formation Period			First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.01 (9.04)	1.10 (7.05)	0.94 (7.42)	0.11 (1.43)	0.17 (1.49)	0.09 (1.30)	0.05 (0.55)	0.14 (1.58)	0.04 (1.21)	0.08 (0.69)	0.14 (1.69)	0.13 (1.64)
2	0.52 (10.2)	0.48 (7.52)	0.41 (7.63)	0.04 (0.87)	-0.00 (-0.09)	-0.00 (-0.07)	0.01 (0.31)	-0.08 (-1.08)	-0.04 (-0.51)	0.06 (1.29)	0.02 (0.23)	-0.03 (-0.30)
3	0.38 (9.86)	0.32 (7.78)	0.27 (6.61)	0.11 (1.71)	0.06 (0.94)	-0.02 (-0.46)	0.11 (1.78)	0.01 (0.16)	-0.07 (-1.27)	0.16 (2.22)	-0.03 (-0.40)	-0.14 (-2.10)
4	0.28 (8.74)	0.21 (6.17)	0.17 (4.85)	0.06 (1.38)	0.01 (0.36)	0.00 (0.13)	0.02 (0.52)	0.02 (0.36)	-0.01 (-0.17)	0.07 (0.97)	0.00 (0.04)	0.03 (0.47)
5	0.20 (6.89)	0.12 (4.92)	0.09 (3.11)	0.07 (1.49)	0.06 (0.98)	0.02 (0.41)	-0.03 (-0.44)	0.03 (0.71)	0.00 (0.04)	-0.00 (-0.00)	0.07 (1.07)	0.04 (0.77)
6	0.12 (4.29)	0.05 (2.14)	0.02 (1.06)	0.14 (2.32)	0.01 (0.38)	-0.00 (-0.04)	0.13 (3.62)	0.04 (0.66)	-0.00 (-0.05)	0.11 (1.80)	0.15 (1.72)	0.02 (0.54)
7	0.04 (1.43)	-0.02 (-1.02)	-0.04 (-1.72)	0.13 (2.46)	0.12 (1.90)	0.03 (0.70)	0.12 (2.65)	0.11 (2.36)	0.05 (1.17)	0.14 (2.40)	0.02 (0.36)	0.04 (1.08)
8	-0.05 (-1.89)	-0.11 (-4.65)	-0.12 (-5.22)	0.14 (2.57)	0.11 (2.18)	0.01 (0.32)	0.10 (1.62)	0.02 (0.35)	0.03 (0.51)	0.09 (2.04)	0.01 (0.27)	0.06 (0.77)
9	-0.17 (-4.74)	-0.22 (-7.56)	-0.23 (-8.55)	0.22 (3.95)	0.03 (0.91)	0.10 (2.17)	0.23 (2.84)	0.10 (1.32)	0.02 (0.27)	0.22 (3.17)	0.11 (1.37)	-0.00 (-0.09)
10	-0.45 (-7.92)	-0.53 (-9.89)	-0.55 (-10.6)	0.30 (3.00)	0.18 (3.06)	0.10 (1.88)	0.34 (4.08)	0.29 (3.62)	0.21 (2.74)	0.28 (4.62)	0.24 (2.75)	0.16 (1.86)
Spread	1.46 (10.5)	1.63 (9.05)	1.49 (10.0)	-0.18 (-1.32)	0.00 (0.04)	-0.02 (-0.25)	-0.29 (-2.01)	-0.14 (-1.45)	-0.18 (-2.30)	-0.24 (-2.26)	-0.11 (-1.25)	-0.07 (-1.01)

Table 10: Post-Ranking One- to Three- Year Alphas for US and NUS managers

This table lists post-ranking alphas for deciles of US and NUS portfolios sorted by their alpha in the evaluation year. The ranking and evaluation periods are one year. The portfolio deciles are rebalanced at the end of every year and are held for one to three post-ranking years. Alphas are calculated from the factor model

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Coefficients were computed for a given year if the manager reported at least 8 months of returns. The factors for the US model are the US market's excess return, the US high-minus-low (HML) portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. The factors for the NUS model are the EAFE market's excess return and the EAFE HML portfolio. All factors are taken from Ken French's data library. The sample period is 1989-2007. All alphas are in percent per month and t-statistics are reported in parentheses next to alphas. Decile 1 contains the best performing portfolios in the evaluation period, and decile 10 contains the worst performing portfolios.

			Evaluation					
	Formation period		First period		Second period		Third period	
Decile	US	NUS	US	NUS	US	NUS	US	NUS
1	1.71 (12.6)	2.51 (9.41)	0.39 (4.06)	0.67 (2.74)	0.17 (1.61)	0.53 (2.22)	0.20 (2.14)	0.34 (1.47)
2	0.81 (10.1)	1.32 (7.14)	0.25 (3.74)	0.43 (2.58)	0.13 (2.16)	0.46 (2.08)	0.13 (1.85)	0.29 (1.55)
3	0.51 (8.53)	0.87 (6.78)	0.17 (2.94)	0.29 (2.31)	0.17 (1.87)	0.43 (2.70)	0.11 (2.31)	0.17 (0.99)
4	0.32 (6.45)	0.62 (5.61)	0.18 (3.10)	0.30 (2.03)	0.13 (2.62)	0.27 (1.75)	0.14 (2.67)	0.21 (1.44)
5	0.18 (4.07)	0.41 (3.98)	0.12 (2.99)	0.33 (2.38)	0.06 (1.02)	0.33 (2.64)	0.13 (2.19)	0.26 (2.02)
6	0.05 (1.30)	0.22 (2.21)	0.12 (2.39)	0.25 (2.41)	0.10 (2.48)	0.20 (1.55)	0.12 (2.57)	0.22 (2.08)
7	-0.07 (-1.76)	0.02 (0.22)	0.04 (0.65)	0.19 (1.63)	0.10 (2.43)	0.30 (2.83)	0.08 (1.57)	0.25 (1.97)
8	-0.22 (-4.83)	-0.23 (-1.77)	0.09 (1.85)	0.18 (1.29)	0.13 (2.32)	0.17 (1.23)	0.08 (1.55)	0.17 (1.53)
9	-0.44 (-7.67)	-0.62 (-3.45)	0.11 (2.03)	0.12 (0.59)	0.12 (2.01)	0.12 (0.75)	0.10 (1.43)	0.24 (1.06)
10	-1.13 (-10.3)	-1.55 (-5.50)	0.05 (0.65)	0.13 (0.59)	0.13 (1.70)	0.10 (0.53)	0.08 (1.13)	0.48 (1.36)
Spread	2.83 (15.7)	4.08 (12.2)	0.29 (3.68)	0.56 (2.52)	0.04 (0.46)	0.34 (1.48)	0.12 (2.52)	-0.19 (-0.50)

Table 11: Post-Ranking One- to Three- Year Alphas, Cross-Sectional Results

These tables list post-ranking alphas for deciles of global equity portfolios sorted by their alpha in the evaluation year. The ranking and evaluation periods are one year. The portfolio deciles are rebalanced at the end of every year and are held for one to three post-ranking years. Alphas are calculated from the factor model

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Coefficients were computed for a given year if the manager reported at least 8 months of returns. The factors for the two factor model are the US market's excess return and the EAFE market's excess return. The factors for the four factor model are the US market's excess return, the EAFE market's excess return, the US high-minus-low (HML) portfolio, and the EAFE HML portfolio. The factors for the six factor model are the US market's excess return, the EAFE market's excess return, the US HML portfolio, the EAFE HML portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. All factors are taken from Ken French's data library. The sample period is 1989-2007. All alphas are in percent per month and t-statistics are reported in parentheses next to alphas. Decile 1 contains the best performing portfolios in the evaluation period, and decile 10 contains the worst performing portfolios. The sample is split four different ways: by fees, assets under management, investment mandate, and by decade. "High fee" (n=178) managers list fees above the sample median fee. If a manager does not report a fee, he/she is placed in the "High fee" category. "High AUM" (n=144) managers have 2007 assets higher than the median manager in 2007. A "Broad Mandate" (n=65) includes managers who report their style focus as "Core/Blend" and they report their capitalization focus as "Broad/Combination." "Narrow Mandates" encompass all other managers. Finally, "Ranking Results from 1989-1999" follows the managers who were ranked before 2000, whereas "Ranking Results from 2000-2007" follows managers ranked after 1999.

Panel A: Fees

High Fees

	Formation Period			Evaluation								
				First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.84 (7.11)	1.90 (5.42)	2.07 (6.63)	0.45 (1.48)	0.61 (2.46)	0.34 (1.35)	0.21 (1.25)	0.51 (1.65)	0.26 (1.06)	0.14 (0.62)	0.36 (0.81)	-0.06 (-0.25)
2	0.86 (7.50)	0.76 (5.88)	0.75 (7.17)	0.27 (2.05)	0.11 (0.61)	-0.14 (-0.69)	0.27 (1.08)	0.36 (1.13)	-0.04 (-0.37)	-0.05 (-0.33)	0.24 (1.48)	0.04 (0.33)
3	0.58 (6.70)	0.48 (4.70)	0.48 (5.65)	0.14 (1.45)	0.30 (1.07)	-0.14 (-0.75)	-0.00 (-0.06)	0.03 (0.18)	0.16 (1.01)	0.18 (1.78)	0.06 (0.32)	0.10 (0.53)
4	0.40 (5.01)	0.26 (2.95)	0.28 (4.01)	0.23 (2.03)	0.15 (0.87)	0.12 (0.54)	0.03 (0.16)	0.17 (1.54)	-0.06 (-0.34)	-0.23 (-1.05)	-0.24 (-1.47)	-0.19 (-1.16)
5	0.25 (3.56)	0.07 (0.99)	0.09 (1.23)	0.25 (2.72)	-0.04 (-0.46)	0.03 (0.17)	0.29 (1.64)	-0.11 (-0.61)	0.05 (0.23)	-0.02 (-0.22)	0.10 (0.68)	0.10 (0.36)
6	0.10 (1.69)	-0.06 (-0.81)	-0.10 (-1.43)	0.32 (3.28)	0.05 (0.46)	0.00 (0.04)	0.16 (2.07)	0.06 (0.46)	-0.01 (-0.13)	0.05 (0.78)	0.01 (0.10)	-0.01 (-0.13)
7	-0.04 (-0.69)	-0.23 (-2.68)	-0.30 (-3.55)	0.20 (2.78)	0.02 (0.17)	-0.21 (-0.93)	0.06 (1.07)	-0.14 (-1.11)	0.14 (1.29)	0.49 (1.61)	-0.03 (-0.22)	0.00 (0.01)
8	-0.22 (-2.90)	-0.42 (-4.41)	-0.49 (-5.17)	0.08 (0.74)	0.09 (1.10)	0.00 (0.06)	0.16 (1.04)	0.04 (0.34)	-0.09 (-1.05)	0.21 (1.63)	-0.07 (-0.58)	0.01 (0.08)
9	-0.45 (-4.59)	-0.63 (-5.47)	-0.78 (-6.30)	0.22 (1.41)	0.24 (2.72)	0.10 (1.38)	0.07 (0.40)	-0.08 (-0.50)	-0.06 (-0.36)	0.23 (1.62)	0.15 (0.66)	-0.10 (-0.55)
10	-1.07 (-7.42)	-1.26 (-5.97)	-1.59 (-5.78)	0.16 (1.01)	-0.14 (-0.65)	-0.25 (-1.26)	0.40 (1.58)	0.18 (1.43)	0.01 (0.08)	0.52 (1.49)	0.09 (0.43)	-0.03 (-0.22)
Spread	2.91 (9.45)	3.17 (8.36)	3.66 (7.81)	0.29 (0.75)	0.75 (2.22)	0.59 (1.81)	-0.18 (-0.51)	0.33 (0.93)	0.24 (0.83)	-0.37 (-1.04)	0.27 (0.78)	-0.02 (-0.09)

Low Fees

	Formation Period			Evaluation								
				First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.01 (9.98)	1.01 (12.9)	1.05 (10.0)	0.24 (2.34)	0.12 (1.05)	0.24 (2.52)	0.05 (0.30)	0.05 (0.51)	0.00 (0.04)	0.01 (0.14)	-0.11 (-1.36)	-0.28 (-1.63)
2	0.54 (6.58)	0.48 (6.73)	0.51 (5.74)	0.08 (1.05)	0.10 (1.09)	-0.09 (-0.64)	0.13 (1.74)	0.05 (0.40)	-0.09 (-0.93)	-0.11 (-1.60)	0.01 (0.20)	0.03 (0.25)
3	0.38 (5.13)	0.30 (4.33)	0.29 (3.02)	0.17 (2.32)	0.08 (0.86)	0.11 (0.76)	0.14 (1.05)	0.09 (0.59)	0.09 (0.76)	-0.02 (-0.32)	-0.00 (-0.04)	-0.14 (-0.90)
4	0.26 (3.54)	0.19 (2.73)	0.17 (1.83)	0.04 (0.36)	0.20 (2.55)	0.05 (0.51)	0.03 (0.21)	0.08 (0.95)	0.00 (0.00)	0.07 (0.77)	-0.10 (-1.36)	-0.10 (-0.88)
5	0.15 (2.29)	0.08 (1.23)	0.05 (0.53)	0.02 (0.33)	0.03 (0.34)	0.03 (0.27)	0.21 (1.84)	-0.00 (-0.02)	0.00 (0.02)	0.08 (1.06)	0.12 (2.14)	0.11 (0.96)
6	0.05 (0.81)	-0.00 (-0.06)	-0.06 (-0.65)	0.10 (0.86)	-0.14 (-2.27)	-0.01 (-0.16)	0.13 (1.31)	0.07 (0.61)	0.04 (0.34)	0.09 (0.65)	-0.02 (-0.45)	0.02 (0.23)
7	-0.04 (-0.66)	-0.11 (-1.63)	-0.17 (-1.73)	0.10 (0.93)	-0.10 (-1.09)	-0.10 (-0.89)	0.15 (1.46)	-0.06 (-0.52)	-0.01 (-0.15)	0.05 (0.45)	0.03 (0.32)	-0.09 (-0.88)
8	-0.16 (-2.42)	-0.23 (-3.40)	-0.29 (-2.73)	0.12 (1.00)	0.10 (1.46)	-0.12 (-1.00)	0.16 (1.06)	0.06 (0.69)	-0.05 (-0.23)	0.06 (0.88)	-0.04 (-0.58)	0.01 (0.12)
9	-0.32 (-3.96)	-0.39 (-5.02)	-0.44 (-3.83)	0.08 (0.91)	-0.07 (-0.96)	-0.08 (-0.67)	0.10 (0.99)	-0.02 (-0.27)	0.08 (0.61)	0.18 (1.64)	-0.01 (-0.12)	-0.19 (-1.42)
10	-0.72 (-7.02)	-0.82 (-7.60)	-0.95 (-8.75)	0.05 (0.37)	-0.03 (-0.23)	-0.21 (-1.05)	0.06 (0.70)	0.04 (0.44)	-0.11 (-0.86)	0.13 (0.89)	-0.12 (-0.91)	0.03 (0.19)
Spread	1.74 (12.4)	1.83 (18.1)	2.00 (12.3)	0.19 (1.36)	0.15 (1.28)	0.46 (2.15)	-0.01 (-0.08)	0.00 (0.08)	0.12 (0.82)	-0.11 (-0.65)	0.00 (0.07)	-0.32 (-2.19)

Panel B: Assets under Management

Low AUM

	Formation Period			Evaluation								
				First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.58 (8.20)	1.80 (6.92)	1.72 (9.59)	0.30 (1.45)	0.55 (2.22)	0.28 (1.30)	0.23 (1.00)	0.54 (1.57)	0.01 (0.04)	0.19 (1.65)	0.03 (0.13)	-0.16 (-0.72)
2	0.76 (6.73)	0.74 (6.28)	0.74 (8.92)	0.14 (1.24)	-0.05 (-0.48)	-0.05 (-0.47)	0.05 (0.43)	0.02 (0.16)	-0.29 (-2.41)	-0.06 (-0.42)	0.31 (0.88)	0.05 (0.35)
3	0.48 (5.29)	0.43 (5.75)	0.45 (7.82)	0.16 (1.23)	0.02 (0.21)	-0.01 (-0.07)	0.13 (1.19)	-0.05 (-0.30)	0.08 (0.63)	0.01 (0.05)	-0.09 (-0.76)	0.28 (1.34)
4	0.31 (3.90)	0.21 (3.54)	0.26 (4.06)	0.05 (0.48)	0.35 (1.42)	-0.05 (-0.36)	0.08 (0.56)	0.10 (0.96)	0.07 (0.28)	-0.04 (-0.52)	0.03 (0.21)	-0.15 (-1.53)
5	0.18 (2.80)	0.10 (1.66)	0.11 (1.79)	-0.06 (-0.59)	0.01 (0.35)	0.07 (0.67)	0.00 (0.01)	-0.07 (-1.25)	-0.12 (-0.68)	0.03 (0.37)	-0.02 (-0.27)	-0.06 (-0.61)
6	0.06 (0.97)	-0.01 (-0.17)	-0.05 (-0.77)	0.06 (0.77)	-0.00 (-0.10)	0.13 (1.62)	0.12 (1.52)	-0.00 (-0.10)	-0.13 (-0.94)	0.37 (2.15)	0.01 (0.22)	0.13 (0.79)
7	-0.06 (-0.95)	-0.17 (-2.24)	-0.22 (-2.83)	0.13 (1.51)	-0.10 (-0.94)	-0.20 (-1.13)	-0.04 (-0.28)	-0.06 (-0.48)	0.06 (0.66)	0.13 (0.83)	0.10 (0.84)	-0.00 (-0.09)
8	-0.21 (-2.66)	-0.35 (-3.66)	-0.41 (-4.66)	0.21 (1.17)	0.06 (0.74)	0.00 (0.03)	0.20 (2.23)	0.00 (0.01)	-0.04 (-0.53)	0.20 (1.77)	0.00 (0.01)	0.03 (0.30)
9	-0.44 (-4.25)	-0.59 (-6.06)	-0.69 (-7.44)	0.00 (0.02)	0.05 (0.38)	0.12 (1.25)	0.21 (1.34)	0.18 (1.20)	0.03 (0.31)	0.17 (1.68)	0.00 (0.07)	0.09 (0.53)
10	-1.03 (-7.21)	-1.19 (-6.74)	-1.44 (-6.12)	0.04 (0.19)	-0.31 (-1.49)	-0.44 (-2.31)	0.14 (1.41)	0.11 (0.71)	-0.10 (-0.62)	0.41 (1.98)	0.28 (1.56)	-0.06 (-0.58)
Spread	2.61 (11.5)	3.00 (10.2)	3.17 (9.10)	0.25 (1.23)	0.86 (2.96)	0.72 (2.45)	0.09 (0.42)	0.43 (1.06)	0.11 (0.41)	-0.22 (-0.97)	-0.25 (-1.30)	-0.09 (-0.49)

High AUM

	Formation Period			Evaluation								
				First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.24 (8.27)	1.21 (7.55)	1.54 (7.28)	0.24 (1.56)	0.27 (1.46)	0.22 (1.51)	0.09 (0.74)	0.16 (0.92)	0.06 (0.34)	0.04 (0.21)	0.13 (0.76)	-0.15 (-0.87)
2	0.65 (8.58)	0.58 (6.68)	0.56 (5.53)	0.14 (1.31)	0.00 (0.09)	0.03 (0.18)	0.23 (1.74)	0.01 (0.13)	-0.10 (-0.71)	0.16 (1.92)	0.07 (0.80)	-0.07 (-0.47)
3	0.48 (7.25)	0.37 (5.36)	0.34 (3.54)	0.21 (2.13)	0.12 (1.29)	-0.00 (-0.03)	0.05 (0.51)	0.11 (0.97)	-0.11 (-0.83)	0.09 (1.03)	-0.07 (-0.44)	-0.14 (-0.83)
4	0.34 (5.36)	0.25 (3.85)	0.20 (2.23)	0.17 (1.87)	0.05 (0.63)	0.20 (1.81)	0.13 (0.98)	0.09 (0.96)	-0.07 (-0.53)	0.05 (0.41)	0.02 (0.26)	-0.03 (-0.19)
5	0.22 (3.09)	0.14 (2.14)	0.09 (1.05)	0.19 (1.95)	-0.03 (-0.26)	-0.15 (-1.19)	0.18 (1.68)	-0.04 (-0.33)	0.04 (0.28)	0.04 (0.52)	0.11 (1.17)	0.30 (2.45)
6	0.10 (1.54)	0.02 (0.40)	-0.01 (-0.13)	0.12 (1.58)	0.00 (0.02)	-0.01 (-0.11)	0.15 (1.47)	0.00 (0.07)	-0.02 (-0.12)	0.21 (1.80)	0.05 (0.45)	-0.01 (-0.09)
7	0.00 (0.01)	-0.09 (-1.30)	-0.14 (-1.49)	0.05 (0.57)	0.01 (0.16)	0.07 (0.46)	0.09 (1.12)	0.04 (0.55)	0.16 (1.53)	0.01 (0.17)	0.01 (0.13)	-0.14 (-0.85)
8	-0.15 (-2.02)	-0.25 (-3.22)	-0.31 (-2.72)	0.11 (1.04)	0.17 (1.60)	-0.00 (-0.04)	0.13 (1.17)	-0.16 (-1.10)	0.08 (0.64)	0.13 (1.31)	-0.07 (-0.69)	-0.01 (-0.09)
9	-0.32 (-4.15)	-0.44 (-5.21)	-0.48 (-3.97)	0.04 (0.40)	-0.06 (-0.54)	-0.05 (-0.50)	0.18 (1.36)	0.07 (0.54)	-0.14 (-1.08)	0.16 (1.10)	0.06 (0.45)	-0.12 (-0.79)
10	-0.77 (-7.68)	-0.95 (-6.36)	-1.09 (-6.22)	0.18 (1.29)	0.04 (0.30)	-0.02 (-0.20)	0.26 (1.45)	0.08 (0.85)	0.01 (0.11)	0.35 (1.83)	-0.10 (-0.59)	0.04 (0.26)
Spread	2.02 (11.1)	2.17 (11.1)	2.63 (8.46)	0.06 (0.30)	0.23 (1.19)	0.25 (1.91)	-0.16 (-0.77)	0.07 (0.41)	0.05 (0.30)	-0.30 (-1.37)	0.24 (1.73)	-0.20 (-1.40)

Panel C: Mandate

Narrow Mandate

	Formation Period			Evaluation: First Period			Evaluation: Second Period			Evaluation: Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.36 (8.16)	1.46 (7.09)	1.62 (8.20)	0.31 (1.85)	0.25 (1.30)	0.21 (1.51)	0.08 (0.48)	0.13 (0.70)	0.00 (0.02)	0.05 (0.34)	0.05 (0.34)	-0.23 (-1.30)
2	0.68 (8.95)	0.65 (8.82)	0.63 (7.98)	0.08 (1.10)	0.07 (0.85)	0.02 (0.13)	0.13 (1.24)	0.13 (0.80)	-0.07 (-0.58)	0.05 (0.69)	0.06 (0.37)	-0.10 (-0.78)
3	0.47 (7.14)	0.39 (6.41)	0.38 (4.75)	0.20 (2.42)	0.18 (1.39)	0.03 (0.23)	0.09 (0.79)	0.12 (1.35)	-0.11 (-0.75)	0.02 (0.24)	-0.05 (-0.48)	0.03 (0.26)
4	0.33 (5.53)	0.23 (4.01)	0.22 (2.76)	0.13 (1.26)	0.01 (0.10)	0.05 (0.32)	0.17 (1.54)	0.09 (0.76)	-0.07 (-0.48)	0.03 (0.39)	0.04 (0.46)	-0.15 (-0.98)
5	0.21 (3.56)	0.12 (2.05)	0.09 (1.14)	0.16 (1.86)	0.12 (1.85)	-0.00 (-0.06)	0.15 (1.63)	-0.03 (-0.34)	0.14 (1.12)	0.19 (1.49)	0.13 (1.21)	0.04 (0.27)
6	0.09 (1.62)	-0.00 (-0.06)	-0.04 (-0.57)	0.17 (1.94)	0.03 (0.44)	-0.05 (-0.66)	0.12 (1.62)	-0.00 (-0.05)	-0.03 (-0.32)	-0.01 (-0.22)	0.03 (0.31)	0.09 (1.14)
7	-0.05 (-0.91)	-0.14 (-2.53)	-0.18 (-1.98)	0.07 (0.70)	-0.00 (-0.00)	0.06 (0.52)	0.09 (1.34)	-0.00 (-0.01)	-0.00 (-0.05)	0.14 (2.12)	0.02 (0.21)	-0.03 (-0.24)
8	-0.19 (-3.12)	-0.32 (-4.60)	-0.31 (-3.37)	-0.03 (-0.37)	-0.02 (-0.23)	-0.02 (-0.14)	0.19 (1.37)	0.02 (0.17)	-0.00 (-0.09)	0.13 (1.65)	-0.02 (-0.17)	-0.03 (-0.27)
9	-0.40 (-5.31)	-0.50 (-5.87)	-0.56 (-5.55)	0.17 (1.57)	-0.01 (-0.12)	-0.07 (-0.72)	0.13 (1.37)	-0.05 (-0.44)	-0.06 (-0.71)	0.17 (1.64)	-0.05 (-0.50)	-0.07 (-0.70)
10	-0.87 (-7.95)	-1.04 (-7.51)	-1.18 (-6.79)	0.05 (0.47)	-0.05 (-0.40)	-0.16 (-1.47)	0.20 (1.60)	0.00 (0.11)	-0.05 (-0.54)	0.44 (2.21)	0.04 (0.30)	-0.01 (-0.14)
Spread	2.23 (10.4)	2.51 (10.3)	2.81 (9.38)	0.25 (1.40)	0.30 (1.62)	0.38 (2.70)	-0.12 (-0.54)	0.12 (0.57)	0.05 (0.30)	-0.38 (-1.82)	0.00 (0.06)	-0.21 (-1.53)

Broad Mandate

	Formation Period			Evaluation: First Period			Evaluation: Second Period			Evaluation: Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.35 (9.54)	1.48 (8.42)	1.51 (7.46)	0.40 (2.08)	0.67 (2.40)	0.32 (1.76)	0.49 (2.50)	0.35 (1.94)	-0.03 (-0.09)	0.35 (2.20)	0.39 (2.02)	0.11 (0.70)
2	0.65 (8.12)	0.62 (8.29)	0.73 (6.10)	0.14 (0.99)	0.17 (1.95)	0.38 (2.17)	-0.00 (-0.03)	0.08 (0.84)	0.20 (1.26)	0.11 (0.98)	0.17 (1.68)	-0.05 (-0.30)
3	0.44 (6.91)	0.37 (6.36)	0.41 (7.12)	0.27 (2.73)	0.11 (1.09)	-0.11 (-1.15)	0.20 (1.57)	-0.04 (-0.13)	0.00 (0.04)	0.04 (0.48)	0.14 (1.15)	0.05 (0.28)
4	0.27 (4.40)	0.19 (3.71)	0.25 (5.34)	-0.01 (-0.21)	0.13 (0.89)	0.07 (0.65)	0.19 (1.46)	-0.04 (-0.27)	0.03 (0.24)	0.02 (0.33)	-0.10 (-1.32)	0.06 (0.50)
5	0.16 (2.65)	0.06 (1.16)	0.12 (2.16)	0.20 (2.00)	0.04 (0.60)	0.00 (0.04)	0.11 (1.13)	0.08 (0.85)	0.28 (3.04)	0.09 (1.08)	-0.07 (-0.72)	0.14 (1.40)
6	0.06 (0.98)	-0.03 (-0.68)	-0.07 (-1.50)	0.10 (1.31)	0.07 (1.37)	0.20 (1.77)	0.17 (1.62)	-0.02 (-0.26)	0.10 (0.70)	0.21 (1.77)	0.06 (0.73)	0.02 (0.26)
7	-0.04 (-0.69)	-0.14 (-2.51)	-0.25 (-2.88)	0.14 (2.12)	-0.00 (-0.01)	0.17 (1.04)	-0.00 (-0.02)	-0.12 (-1.04)	0.02 (0.23)	0.27 (1.33)	-0.05 (-0.36)	0.16 (0.84)
8	-0.15 (-2.66)	-0.26 (-3.94)	-0.37 (-4.19)	0.13 (1.30)	0.09 (0.86)	-0.17 (-1.06)	0.07 (0.56)	-0.01 (-0.18)	0.03 (0.36)	-0.01 (-0.08)	-0.04 (-0.33)	0.06 (0.37)
9	-0.36 (-3.21)	-0.42 (-5.45)	-0.59 (-4.18)	0.11 (0.89)	0.23 (1.06)	0.24 (1.69)	0.30 (2.75)	0.36 (1.91)	-0.08 (-0.86)	0.25 (1.01)	-0.00 (-0.02)	-0.01 (-0.06)
10	-0.76 (-6.06)	-1.02 (-4.93)	-1.36 (-5.45)	0.33 (2.22)	-0.33 (-0.97)	-0.71 (-1.77)	0.14 (1.20)	0.26 (1.09)	0.05 (0.32)	0.16 (0.92)	0.17 (0.80)	0.06 (0.41)
Spread	2.11 (10.0)	2.51 (10.3)	2.88 (7.60)	0.06 (0.30)	1.00 (2.22)	1.03 (2.18)	0.35 (1.61)	0.09 (0.28)	-0.09 (-0.23)	0.19 (0.80)	0.22 (0.96)	0.05 (0.22)

Panel D: Time Horizon

Ranking results from 1989-1999

	Formation Period			Evaluation								
				First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.14 (6.28)	1.27 (7.03)	1.63 (5.75)	0.29 (1.47)	0.36 (1.29)	0.31 (1.56)	-0.02 (-0.13)	0.21 (0.90)	0.06 (0.26)	0.07 (0.35)	0.20 (0.79)	-0.20 (-0.89)
2	0.61 (5.82)	0.65 (6.09)	0.66 (7.06)	0.06 (0.53)	0.15 (1.17)	0.09 (0.46)	0.19 (1.41)	0.09 (0.38)	-0.13 (-0.74)	0.08 (0.74)	0.12 (0.65)	0.08 (0.46)
3	0.44 (4.34)	0.38 (4.02)	0.39 (4.22)	0.18 (1.27)	0.28 (1.71)	0.07 (0.39)	0.01 (0.11)	0.14 (1.07)	0.03 (0.16)	0.08 (0.55)	0.02 (0.11)	0.08 (0.38)
4	0.31 (3.19)	0.23 (2.50)	0.21 (1.88)	0.23 (1.55)	0.04 (0.30)	0.13 (0.73)	0.23 (1.22)	0.18 (1.00)	-0.15 (-0.71)	0.09 (0.63)	0.12 (0.97)	-0.16 (-0.96)
5	0.19 (1.99)	0.14 (1.51)	0.09 (0.75)	0.12 (1.01)	0.19 (2.03)	0.07 (0.37)	0.17 (1.65)	-0.05 (-0.38)	0.29 (1.50)	0.25 (1.76)	0.19 (1.50)	0.24 (1.27)
6	0.09 (0.95)	0.01 (0.17)	-0.03 (-0.28)	0.21 (1.58)	-0.01 (-0.09)	-0.09 (-0.64)	0.13 (1.08)	0.00 (0.03)	-0.06 (-0.37)	-0.04 (-0.25)	0.02 (0.19)	-0.04 (-0.32)
7	-0.03 (-0.36)	-0.12 (-1.36)	-0.16 (-1.16)	0.02 (0.21)	-0.00 (-0.06)	0.12 (0.61)	0.17 (2.01)	0.07 (0.71)	0.18 (1.46)	0.16 (2.13)	0.04 (0.26)	0.07 (0.37)
8	-0.18 (-1.84)	-0.29 (-2.83)	-0.29 (-1.89)	-0.10 (-0.71)	-0.01 (-0.09)	0.01 (0.07)	0.33 (1.86)	0.19 (1.16)	-0.05 (-0.28)	0.20 (1.82)	0.01 (0.13)	0.04 (0.31)
9	-0.40 (-3.26)	-0.46 (-3.86)	-0.54 (-3.30)	0.20 (1.37)	0.01 (0.09)	-0.14 (-0.67)	0.24 (2.07)	0.05 (0.31)	0.00 (0.08)	0.22 (1.40)	-0.09 (-0.72)	-0.15 (-1.00)
10	-0.81 (-4.67)	-0.92 (-5.52)	-0.97 (-5.02)	0.05 (0.29)	-0.05 (-0.37)	0.00 (0.03)	0.41 (2.92)	0.12 (1.08)	-0.00 (-0.05)	0.46 (1.92)	0.09 (0.52)	0.06 (0.43)
Spread	1.95 (7.32)	2.20 (9.35)	2.61 (6.55)	0.24 (1.42)	0.42 (1.59)	0.31 (1.89)	-0.44 (-1.84)	0.08 (0.32)	0.07 (0.29)	-0.39 (-1.64)	0.10 (0.53)	-0.26 (-1.66)

Ranking results from 2000-2007

	Formation Period			Evaluation								
				First Period			Second Period			Third Period		
Decile	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor	2 Factor	4 Factor	6 Factor
1	1.65 (8.07)	1.76 (5.06)	1.67 (6.07)	0.34 (1.70)	0.25 (2.65)	0.17 (1.25)	0.37 (2.56)	0.23 (1.64)	0.04 (0.50)	0.10 (0.70)	-0.13 (-0.95)	-0.27 (-1.26)
2	0.76 (6.99)	0.67 (5.32)	0.66 (4.78)	0.15 (1.08)	-0.06 (-0.70)	-0.11 (-1.05)	0.24 (3.86)	-0.07 (-0.55)	-0.10 (-0.80)	0.08 (0.60)	-0.05 (-0.55)	-0.16 (-1.54)
3	0.51 (6.29)	0.41 (4.91)	0.42 (3.63)	-0.01 (-0.21)	-0.02 (-0.41)	-0.11 (-1.95)	0.12 (3.05)	0.07 (0.70)	-0.15 (-1.30)	-0.07 (-2.54)	-0.01 (-0.21)	-0.13 (-1.39)
4	0.34 (4.68)	0.23 (3.46)	0.23 (2.45)	0.20 (2.34)	-0.09 (-0.83)	0.01 (0.16)	0.15 (1.44)	-0.20 (-1.03)	-0.07 (-0.63)	0.01 (0.21)	-0.12 (-0.93)	-0.12 (-1.31)
5	0.21 (3.43)	0.10 (1.60)	0.09 (1.13)	0.07 (1.27)	-0.00 (-0.07)	-0.12 (-2.07)	0.10 (1.60)	0.02 (0.30)	-0.08 (-1.14)	-0.01 (-0.43)	-0.06 (-1.22)	-0.17 (-2.12)
6	0.08 (1.50)	-0.01 (-0.31)	-0.04 (-0.66)	0.05 (0.94)	-0.01 (-0.37)	-0.03 (-0.76)	0.06 (0.96)	0.00 (0.08)	-0.09 (-0.95)	0.06 (0.71)	-0.06 (-0.59)	-0.05 (-0.99)
7	-0.04 (-0.79)	-0.15 (-2.36)	-0.18 (-2.32)	0.20 (1.37)	-0.03 (-0.37)	-0.11 (-1.73)	0.04 (0.51)	-0.16 (-1.75)	-0.07 (-1.14)	0.09 (0.81)	-0.08 (-0.66)	-0.16 (-2.14)
8	-0.18 (-3.85)	-0.32 (-3.88)	-0.35 (-5.18)	0.10 (1.40)	0.00 (0.07)	0.01 (0.23)	-0.07 (-0.77)	-0.14 (-0.90)	-0.07 (-0.82)	0.09 (1.05)	0.00 (0.04)	-0.01 (-0.07)
9	-0.37 (-7.61)	-0.53 (-4.86)	-0.61 (-6.29)	0.13 (1.64)	0.02 (0.34)	0.01 (0.13)	-0.10 (-1.00)	-0.10 (-1.47)	-0.12 (-0.97)	0.12 (1.44)	-0.12 (-0.90)	-0.03 (-0.15)
10	-0.93 (-10.2)	-1.19 (-4.89)	-1.53 (-5.32)	0.11 (0.69)	-0.10 (-0.37)	-0.34 (-1.63)	-0.13 (-1.01)	-0.08 (-0.42)	-0.19 (-0.92)	0.21 (0.92)	-0.04 (-0.16)	-0.17 (-0.69)
Spread	2.58 (12.3)	2.95 (8.10)	3.20 (7.69)	0.22 (0.76)	0.36 (1.32)	0.51 (2.40)	0.51 (3.60)	0.31 (1.32)	0.23 (1.02)	-0.11 (-0.55)	-0.08 (-0.38)	-0.10 (-0.37)

Table 12: Post-Ranking One- to Three- Year Gammas

This table lists post-ranking gammas for deciles of global equity portfolios sorted by their gamma in the evaluation year. The ranking and evaluation periods are one year. The portfolio deciles are rebalanced at the end of every year and are held for one to three post-ranking years. Gammas are calculated from the factor model

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Coefficients were computed for a given year if the manager reported at least 8 months of returns. The factors for the model are the US market's excess return, the square of the US market's excess return, the EAFE market's excess return, and the square of the EAFE market's excess return. All factors are taken from Ken French's data library. The sample period is 1989-2007. Decile 1 contains the best performing portfolios in the evaluation period, and decile 10 contains the worst performing portfolios. t-statistics are reported in parentheses next to the gammas.

			Evaluation					
	Formation period		First period		Second period		Third period	
Decile	US Gamma	NUS Gamma	US Gamma	NUS Gamma	US Gamma	NUS Gamma	US Gamma	NUS Gamma
1	0.13 (3.90)	0.12 (4.40)	-0.00 (-0.17)	0.01 (1.09)	-0.01 (-0.93)	-0.01 (-0.98)	-0.01 (-0.65)	0.00 (0.52)
2	0.05 (3.22)	0.05 (4.69)	-0.01 (-1.29)	-0.01 (-2.14)	-0.00 (-0.20)	0.02 (0.70)	0.02 (2.58)	0.00 (0.48)
3	0.02 (2.03)	0.03 (4.03)	-0.00 (-0.07)	-0.00 (-0.60)	-0.03 (-1.86)	-0.01 (-1.17)	-0.02 (-1.92)	-0.00 (-1.40)
4	0.01 (0.89)	0.01 (2.57)	0.00 (0.31)	0.00 (0.62)	-0.02 (-1.89)	-0.00 (-0.21)	-0.01 (-0.74)	-0.01 (-1.98)
5	-0.00 (-0.34)	0.00 (0.44)	-0.01 (-1.17)	-0.00 (-0.95)	-0.01 (-0.61)	-0.00 (-0.47)	-0.02 (-1.11)	-0.00 (-0.49)
6	-0.01 (-1.90)	-0.00 (-2.02)	-0.02 (-1.88)	-0.00 (-0.09)	-0.01 (-0.85)	0.00 (0.36)	-0.02 (-1.21)	-0.00 (-0.70)
7	-0.03 (-3.30)	-0.02 (-3.92)	-0.02 (-2.28)	-0.00 (-1.09)	-0.01 (-0.97)	-0.00 (-0.71)	-0.01 (-0.72)	-0.01 (-1.64)
8	-0.05 (-4.22)	-0.03 (-4.58)	-0.02 (-0.96)	-0.01 (-1.20)	-0.00 (-0.64)	-0.00 (-0.09)	-0.02 (-1.26)	0.00 (0.02)
9	-0.08 (-4.83)	-0.06 (-4.59)	-0.00 (-0.69)	-0.00 (-0.71)	-0.01 (-0.48)	-0.00 (-0.26)	-0.00 (-0.36)	-0.00 (-0.37)
10	-0.16 (-5.18)	-0.12 (-5.01)	-0.01 (-0.78)	-0.01 (-1.17)	0.00 (0.14)	-0.01 (-0.96)	0.00 (0.01)	-0.01 (-1.27)
Spread	0.30 (5.09)	0.25 (5.30)	0.01 (0.74)	0.04 (1.68)	-0.02 (-0.80)	0.00 (-0.22)	-0.02 (-0.64)	0.02 (1.63)

Figure 1: Ranking and Evaluation Periods

This figure illustrates the two separate methods that we use to rank and evaluate global managers. One method forms deciles based on the managers' 12-month alpha and then computes each decile's alpha each year for the next three years. The second method forms deciles based on the managers' 36-month alpha and then computes each decile's alpha for the following 3 36-month periods. Alphas are calculated from the factor model

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Using 12-month periods, coefficients were computed for a given year if the manager reported at least 8 months of returns. Using 36-month periods, coefficients were computed for a given year if the manager reported at least 24 months of returns.

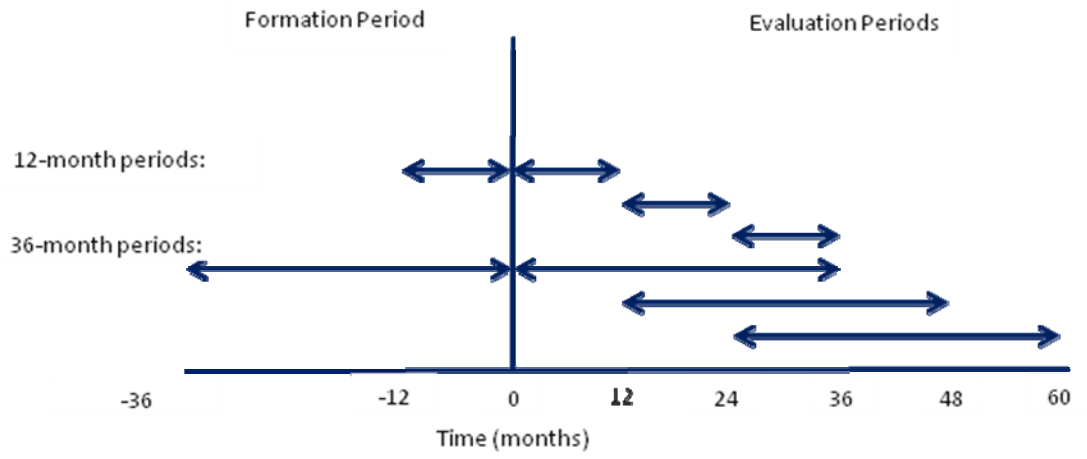


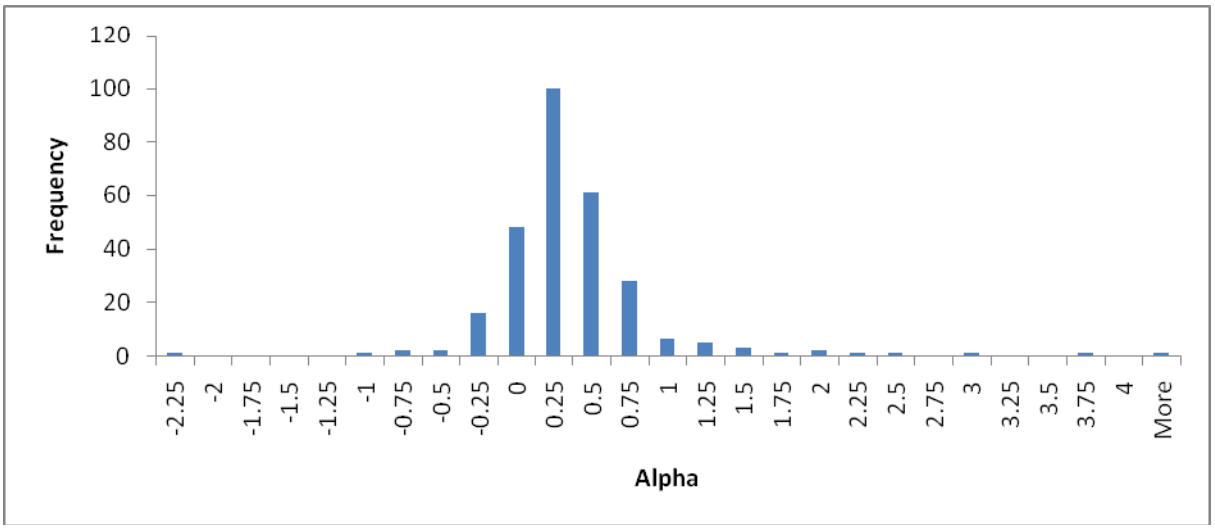
Figure 2: Alpha distribution

Four and six factor models are estimated for the entire time series of each global equity portfolio using the factor model:

$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t periods. The factors for the four factor model are the US market's excess return, the EAFE market's excess return, the US high-minus-low (HML) portfolio, and the EAFE HML portfolio. The factors for the six factor model are the US market's excess return, the EAFE market's excess return, the US HML portfolio, the EAFE HML portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. All factors are taken from Ken French's data library. Alphas are in percent per month. The sample period is 1989-2007.

Panel A: Four Factor Model



Panel B: Six Factor Model

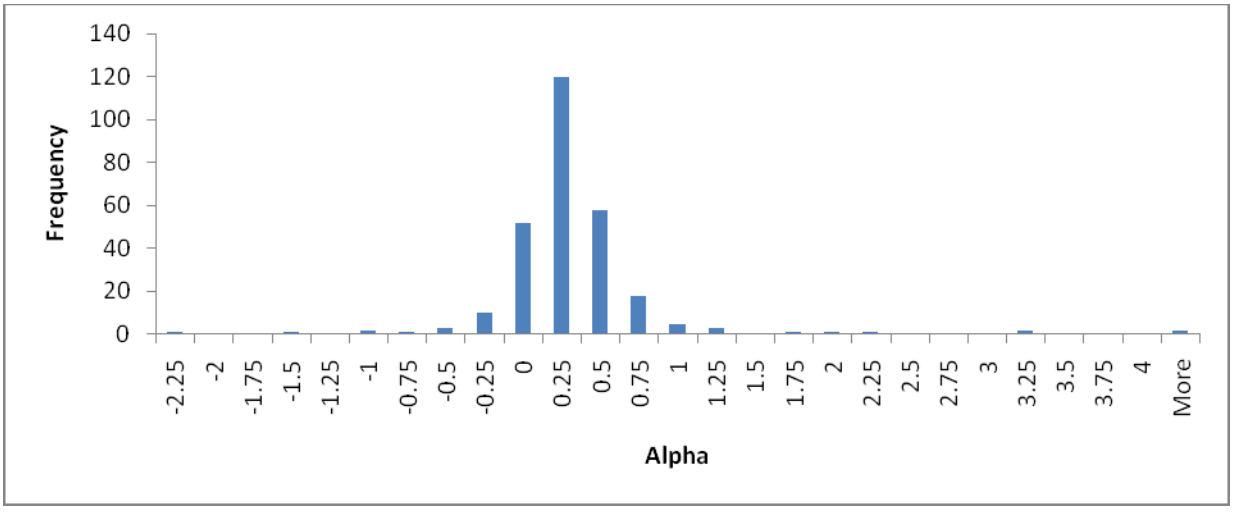


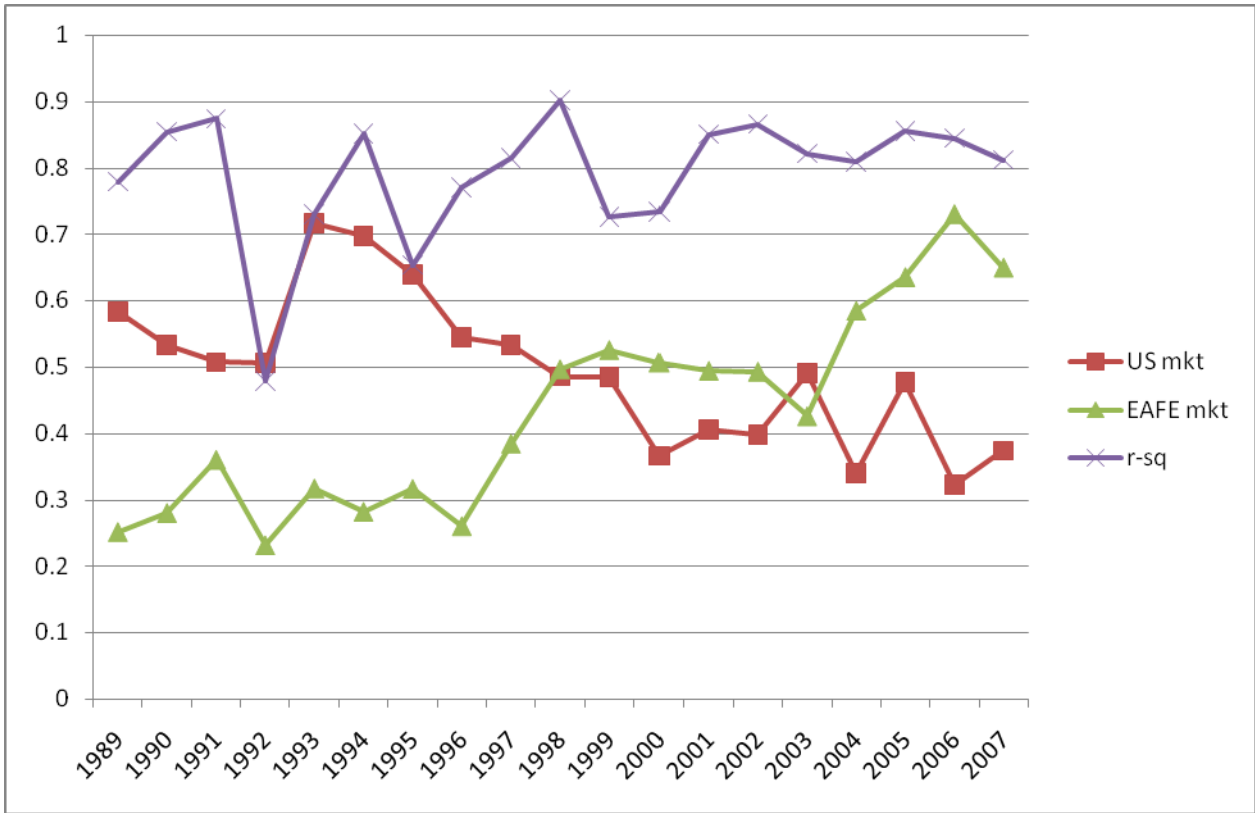
Figure 3: Average Exposures over Time

Two, four, and six factor models are estimated each year for every global equity manager in the sample period using the factor model:

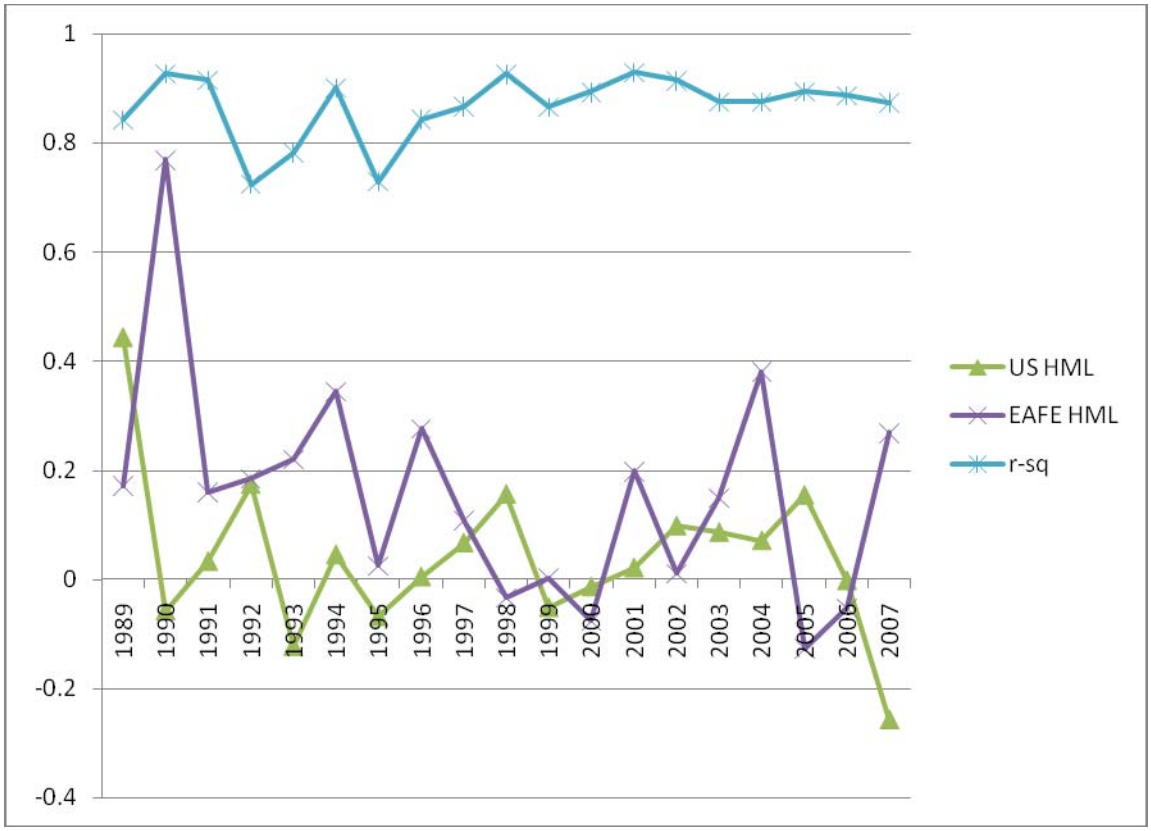
$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t months. Coefficients were computed for a given year if the manager reported at least 8 months of returns. The factors for the two factor model are the US market's excess return and the EAFE market's excess return. The factors for the four factor model are the US market's excess return, the EAFE market's excess return, the US high-minus-low (HML) portfolio, and the EAFE HML portfolio. The factors for the six factor model are the US market's excess return, the EAFE market's excess return, the US HML portfolio, the EAFE HML portfolio, the US small-minus-big (SMB) portfolio, and the US winners-minus-losers (WML) portfolio. All factors are taken from Ken French's data library. Every year exposures are averaged over all active global equity managers.

Panel A: Two Factor Exposures per Year



Panel B: Four Factor Exposures per Year



Panel C: Six Factor Exposures per Year

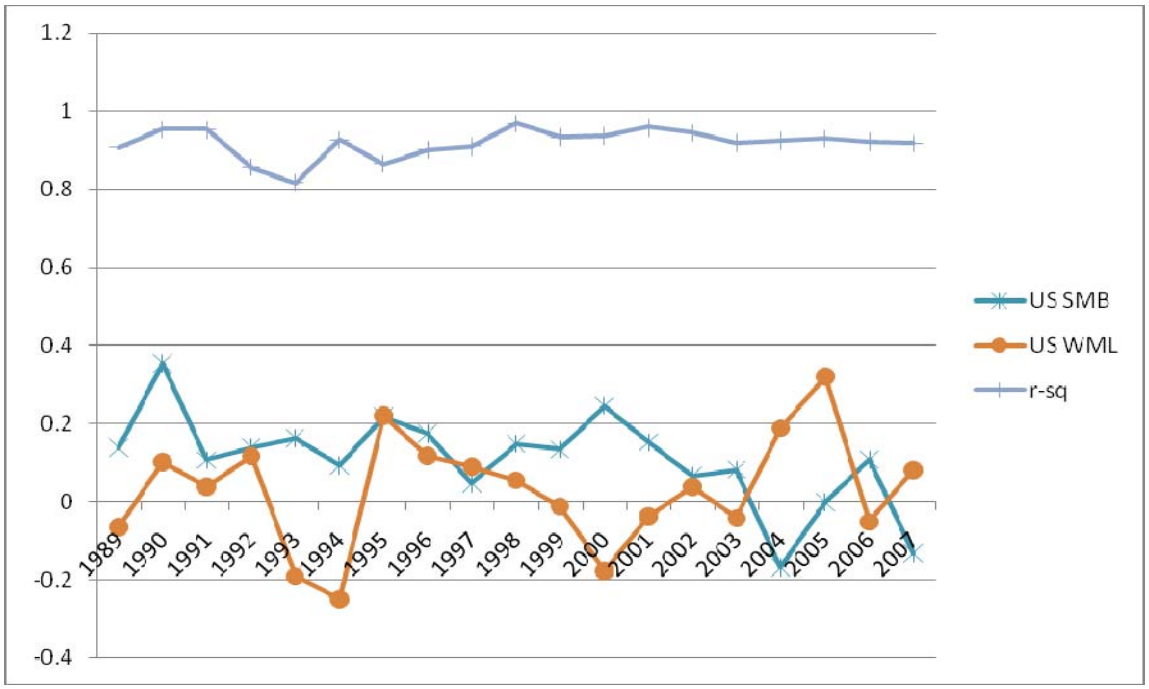


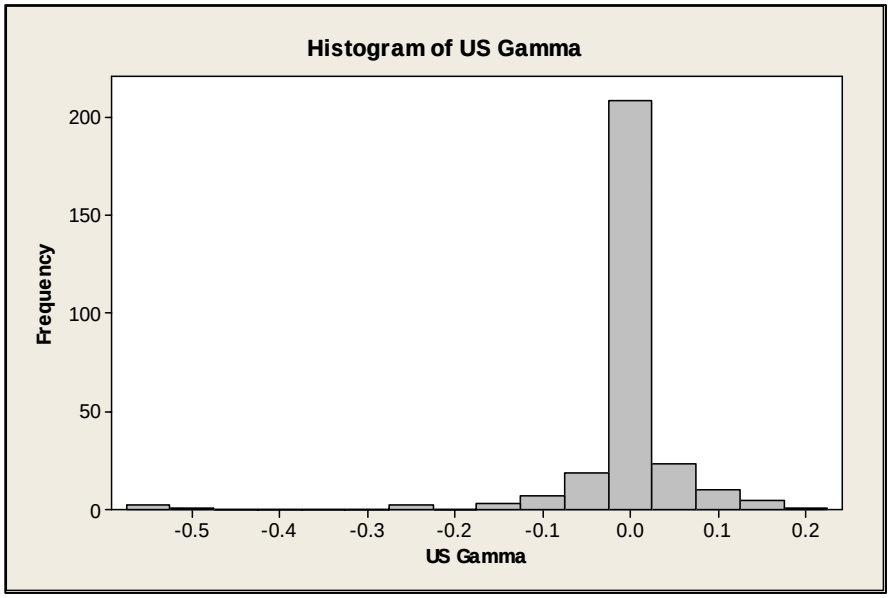
Figure 4: Gamma distributions

Coefficients are estimated for the entire time series of each global equity portfolio using the factor model:

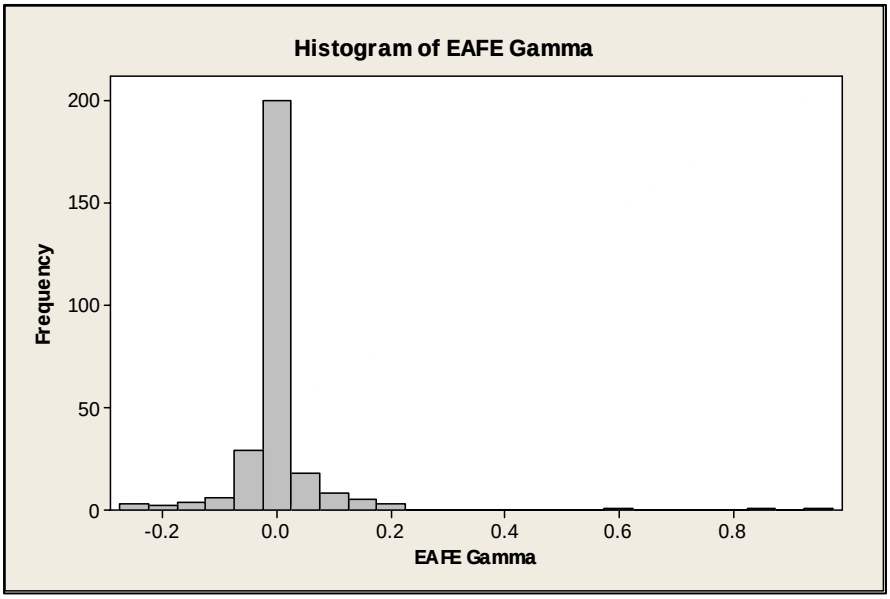
$$r_{p,t} = \alpha_p^U + \sum_{k=1}^{K} \beta_{p,k} f_{k,t} + \varepsilon_{p,t}$$

where f are K factors over t periods. The factors for the model are the US market's excess return, the square of the US market's excess return, the EAFE market's excess return, and the square of the EAFE market's excess return. All factors are taken from Ken French's data library. The sample period is 1989-2007. "Gamma" refers to the coefficient of the squared market terms.

Panel A: US Gamma



Panel B: EAFE Gamma



Appendix A: Acadian Asset Management, Global Equity Strategy

The following pages are a sample of the data we have for each manager in the database. Certain fields, like returns and assets under management, are reported for every manager in the database. Other fields, like country allocations, are only reported by a subset of managers.

Acadian Asset Management, LLC
Global Equity Strategy

Attn:Jim Wylie, Senior V.P.
One Post Office Square, 20th Floor
Boston, MA 02109

As of December 31, 2007

Firm Information (Last Updated:01/16/2008)

Contact: James Wylie
Title: Senior Vice President
Phone: 617-850-3570
Fax: 617-850-3670
E-Mail: jwylie@acadian-asset.com

Firm Founded: 1977
Ownership: Wholly Owned Subsidiary
Acadian is ultimately affiliated with Old Mutual plc, a U.K.-based financial services entity. Our direct affiliation is with Old Mutual's U.S.-based institutional asset

Product Information (Last Updated:01/16/2008)

Product Type: Equity
Investment Philosophy: Active - Bottom Up
Capitalization Focus: Broad / Combination
Style Focus: Value
Construction Process: Optimization

Primary Stock/Issue Selection Method: Quantitative Valuation
Regional Market Focus: Global

Sources of Value Added:
0 % Country
0 % Style
10 % Sector
90 % Security
0 % Currency
0 % Active Asset

Investment Professionals

Name	Title	Responsibility	Year Started with Firm	Year Started in Industry
Ronald Frashure	President	Co-Chief Investment Officer	1985	1985
John Chisholm	Executive V.P.	Co-Chief Investment Officer	1985	1985
Gary Bergstrom	Chairman	Chairman	1977	1969
Brian Wolahan	Senior V.P.	Senior Portfolio Manager	1990	1990
Churchill Franklin	Executive V.P.	Marketing Director	1986	1986

Total Number of Portfolio Managers: 12
Total Number of Research Analysts: 12
Total Number of Economists: 0
Total Number of Security Traders: 11

Average Number of Accounts Per Manager:
Total Number of Client Service Personnel: 9
Total Number of Marketing Personnel: 9
Total Number of Currency Traders: 0

Investment Structure and Fees

Open for New Business? No
Minimum Acct Size ($Mil) 25
Will Negotiate Performance Fees? No
Separate/Commingled Fund? Both
Are Derivatives Used? Yes

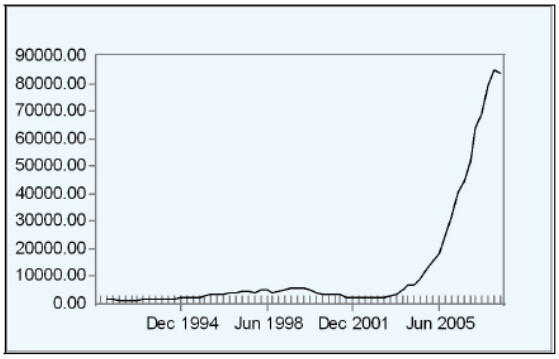
Fee Schedule
0.75% on First $25MM
0.65% on Next $25MM
0.5% on Next $100MM
0.4% on Balance

Sources of Research
% Internal 80
% External 20

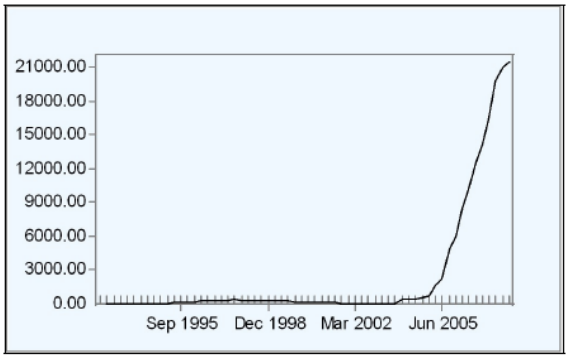
# of Companies in Universe:
# of Companies Visited Per Year:

Assets Under Management

Firm Assets ($ Millions)



Product Assets ($ Millions)



Acadian Asset Management, LLC
Global Equity Strategy
As of December 31, 2007

Representative Composite Information

Product Inception Year: 1992
Returns Conform with AIMR: Yes
AIMR Compliant Since: 1/1/1994
Composite Dollar-Weighed: Yes
Composite Includes Returns from Prior Firm: No
Base Currency: U.S. Dollar

Description of Composite:

Most Appropriate Benchmark: MS World

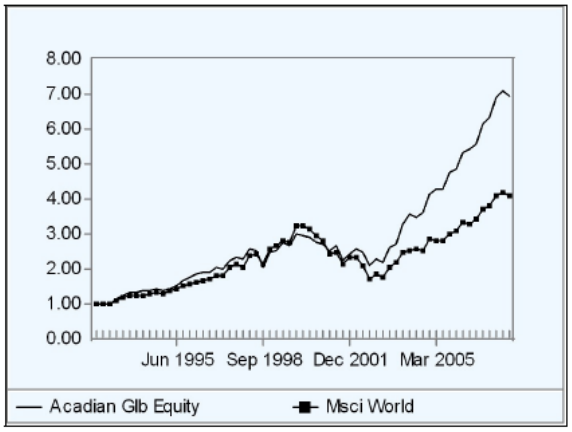
Representative Clients

Client Name	Assets ($MM)	Plan Type	Managed Since
Confidential1	3,659.95	Public Pension	08/2005
Cofidential2	1,064.92	Public Pension	07/2005
Cnfidential3	963.84	Public Pension	03/2007
Cofidential4	819.08	Public Pension	08/2005
Confidential5	808.25	Public Pension	09/2003

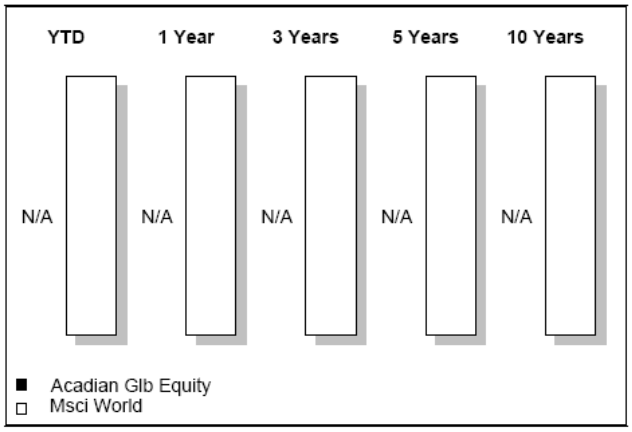
Investment Performance

	Annualized			12 Mo									
	3 YR	5 YR	10 YR	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
Acadian Glb Equity	18.72	25.09	11.69	13.28	25.60	17.59	26.38	44.85	-6.84	-10.26	-9.03	21.33	6.94
Msci World	12.76	16.96	7.00	9.04	20.07	9.49	14.71	33.12	-19.89	-16.81	-13.19	24.95	24.34

Growth of One Dollar



Universe Analysis: Wilshire Global



Acadian Asset Management, LLC
Global Equity Strategy
As of December 31, 2007

Style & Risk Characteristics

Quarter	Growth		Median Size	Valuation				
	5 Yr EPS	5 Yr Div	Mkt Cap $MM	P/E	P/B	YLD	ROE	DBT/EQ
03/2006	26.9	7.2	10,069.1	13.1	2.8	1.9	26.1	0.95
06/2006	16.8	6.2	8,470.4	13.0	2.5	2.1	28.1	0.77
09/2006	16.5	7.0	8,445.5	13.7	2.6	1.9	25.5	0.73
12/2006	13.7	6.5	7,798.0	14.0	2.5	1.8	22.5	0.64
03/2007	23.5	11.3	8,264.2	12.1	2.2	2.2	22.6	0.56
06/2007	30.0	11.4	9,701.8	13.0	2.1	2.1	25.0	0.51
09/2007	28.5	13.1	6,615.5	12.9	2.2	2.2	23.6	0.51
12/2007	28.6	13.4	7,532.3	13.8	2.3	2.3	23.6	0.55
Msci World	19.3	8.3	7,359.7	16.2	2.5	2.4	21.5	0.80

Structural Characteristics

Quarter	$(MIL)	#Stk	% Cash	% Bond	% Stock	Wilshire Sectors							
						ENR	MAT	CAP	CGD	SRV	FIN	MIN	GMN
03/2006	64.6	113	0.7	--	99.3	12.2	11.6	19.4	14.1	16.8	25.6	0.0	0.3
06/2006	66.1	121	0.7	--	99.3	10.0	9.7	16.8	14.1	15.5	28.3	5.3	0.3
09/2006	69.8	132	2.6	--	97.4	9.6	10.4	19.2	21.6	11.0	24.6	3.4	0.0
12/2006	74.3	119	0.9	--	99.1	12.1	8.0	15.6	14.2	16.5	33.1	0.0	0.5
03/2007	76.3	138	0.8	--	99.2	14.3	9.4	14.9	14.4	17.7	28.7	0.0	0.6
06/2007	82.8	120	1.4	--	98.6	15.5	11.8	18.4	10.7	17.9	25.1	0.4	0.0
09/2007	85.0	143	1.3	--	98.7	16.1	10.0	16.3	13.8	19.5	22.6	1.3	0.3
12/2007	84.2	142	0.8	--	99.2	17.2	7.4	17.6	13.9	18.3	22.5	3.1	0.0
Msci World	28569329.7	1958	--	--	--	13.4	6.4	18.2	19.4	18.2	22.6	1.3	0.5

Country Allocation (% of Equity Holding)

	Msci World Index	12/2007	09/2007	06/2007	03/2007
EUROPE					
AUSTRIA	0.3	0.2	0.4	0.5	0.4
BELGIUM	0.6	1.6	0.7	0.8	0.5
DENMARK	0.5	0.7	0.7	0.6	0.1
FINLAND	0.9	0.0	0.0	0.0	0.0
FRANCE	4.9	3.1	6.8	7.5	8.4
GERMANY	4.6	8.2	8.1	7.9	7.3
IRELAND	0.3	0.0	0.0	0.0	0.0
ITALY	1.9	0.3	0.2	0.0	1.6
NETHERLANDS	1.5	4.9	5.4	4.6	3.8
NORWAY	0.5	0.1	0.1	0.3	0.4
SPAIN	2.1	1.9	0.0	0.0	1.2
SWEDEN	1.1	2.2	2.6	2.9	0.3
SWITZERLAND	3.2	0.4	0.5	0.0	0.0
UNITED KINGDOM	10.8	7.0	7.2	8.1	7.9
AMERICAS					
CANADA	4.2	0.7	1.0	0.2	2.1
UNITED STATES	46.1	41.8	43.5	43.4	43.5
PACIFIC BASIN					
AUSTRALIA	3.1	3.6	2.9	6.1	6.1
HONG KONG	1.1	3.5	0.0	0.4	0.0
JAPAN	9.7	7.9	9.6	6.7	7.3
MALAYSIA	0.0	0.0	0.0	0.0	0.0
NEW ZEALAND	0.1	0.0	0.2	0.1	0.0
SINGAPORE	0.6	1.7	1.4	0.7	0.0
OTHER COUNTRIES	1.9	10.2	8.7	9.2	9.1